

FINANCIAL HISTORY

THE MAGAZINE OF THE MUSEUM OF AMERICAN FINANCE



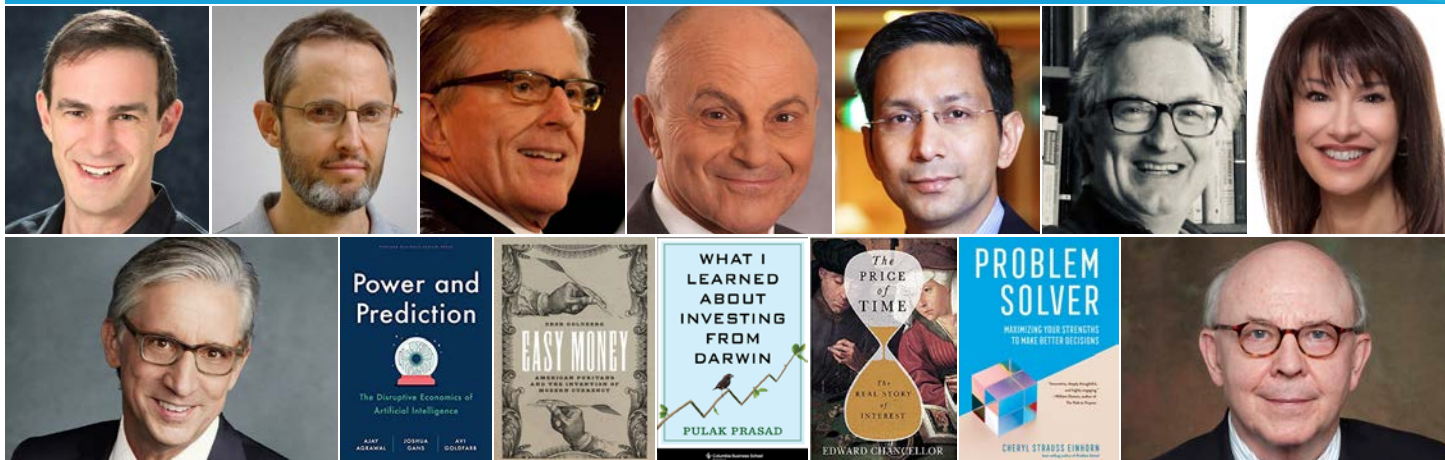
50 Years of Exchange-Traded Options

Applying the Rules of Natural Selection to Investing

The Invention of Modern Currency in 1690 Massachusetts

ISSUE 145 | SPRING 2023

Join Us for our Spring Programs!



April 4 **Virtual Event:** Avi Goldfarb on *Power & Prediction: The Disruptive Economics of Artificial Intelligence*. 12:00 pm (ET). In partnership with the Fordham Gabelli Center and CFA Society NY.

April 27 **Virtual Event:** Dror Goldberg, in Conversation with Richard Sylla, on *Easy Money: American Puritans and the Invention of Modern Currency*. 12:00 pm (ET). In partnership with the Fordham Gabelli Center and CFA Society NY.

May 12 **Hybrid Event:** A Conversation with David Booth and Eugene F. Fama, moderated by Bob Pisani. 1:00 pm (ET). In partnership with the University of Chicago Booth School of Business.

May 17 **Virtual Event:** Pulak Prasad on *What I Learned About Investing from Darwin*. 12:00 pm (ET). In partnership with the Fordham Gabelli Center and CFA Society NY.

June 15 **Virtual Event:** Edward Chancellor on *The Price of Time: The Real Story of Interest*. 12:00 pm (ET). In partnership with the Fordham Gabelli Center and CFA Society NY.

June 22 **Virtual Event:** Cheryl Strauss Einhorn on *Problem Solver: Maximizing Your Strengths to Make Better Decisions*. 12:00 pm (ET). In partnership with the Fordham Gabelli Center and CFA Society NY.

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All above events include a Q&A and are FREE. Registration is required.

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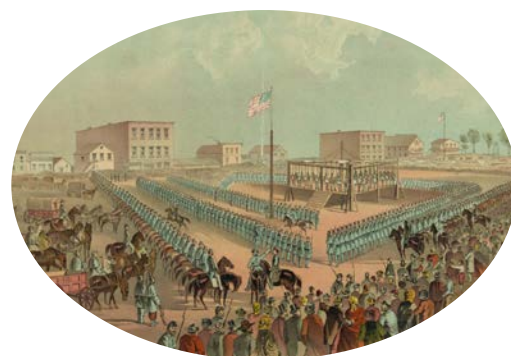
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2023 Gala Resumes as In-Person Event, Attracts Record Number of Attendees

ON MARCH 13, we were thrilled to welcome back the Museum's supporters to an in-person Gala celebrating our recent accomplishments and raising funds for the educational and public programs we continue to provide for students and adults across the United States and beyond.



Message to Members

David J. Cowen | President and CEO

More than 525 people attended this year's Gala, which was held for the first time at Cipriani 42nd Street. It was our first in-person Gala since 2020.

Despite the markets being down due to the collapse of Silicon Valley Bank the prior week, the mood of the evening was festive, as our supporters seemed to be excited to be back in person for a good cause, while enjoying the company of many colleagues and contacts they hadn't seen in recent years. Additional details and photographs from the Gala can be found on pages 6–7 of this magazine and online at www.moaf.org/2023gala.

We continue to display documents and objects from our collection in exhibits throughout the country. In January, we loaned one of the highlights of our 18th century collection to the US Capitol Visitor Center in Washington, DC, for an exhibit titled "E Pluribus Unum: Out of Many, One." The exhibit features our US bond certificate signed by Patrick Henry for \$416.04 of "assumed debt," dated November 1792. The exhibit will be on view through July 2023.

In addition, we are currently featured in two exhibits in New York City. If you're in Times Square, check out the finance gallery at RiseNY, featuring our Hamilton statue and check, as well as the Bull &

Bear statue that had been on view at 48 Wall Street. Also, the "Ebb & Flow: Tapping into the History of New York City's Water" exhibit that we opened just prior to the pandemic is now back on view at the NYC Municipal Archives at 31 Chambers Street near City Hall Park.

We also continue to host a variety of in-person and virtual events and educational programs, all of which are free to attend. Our two adult education series, presented in partnership with the New York Public Library, attracted more than 4,500 participants in 2022 and have both resumed in 2023. Our Museum Finance Academy (MFA), which we expanded to a national audience last Spring, has resumed this Spring as a national program as well.

In May, we will co-host for the first time a hybrid program with the University of Chicago, which will be held in person at the Booth School of Business and broadcast live to the MoAF audience via Zoom. The program will feature two legendary financiers and economists—David Booth and Nobel laureate Eugene Fama—in conversation with CNBC Senior Markets Correspondent and MoAF Trustee Bob Pisani.

Also this Spring, we are offering a full line-up of virtual events in partnership with our good friends at the Fordham University Gabelli School of Business. Topics range from artificial intelligence to long-term investing strategies to the essential function of interest. Visit www.moaf.org/events to register for these programs or www.moaf.org/videos to watch any of the events you may have missed. \$



MoAF Trustee Dick Sylla (left) and President David Cowen with the Museum's Patrick Henry bond in the "E Pluribus Unum: Out of Many, One" exhibit in the US Capitol Visitor Center.

India House's "Basic Commodities of Commerce"

By Sarah Poole, Collections Manager

MUSEUM FOUNDER JOHN HERZOG recently donated to the permanent collection a unique artifact from the India House club—a specimen cabinet containing the “Basic Commodities of Commerce.” The cabinet was prepared by The Economic Laboratories and curator Chas. R. Toothaker, and it was presented to India House on April 28, 1922 by James A. Farrell. Made of mahogany wood, the specimen chest has 30 labeled drawers containing samples of commodities, including items such as grains, coffee, tobacco, woods, cotton, silk, furs, leather, metals and more. Each specimen is neatly displayed and labeled with its name and a description of its use, as well as its country or region of origin.

Farrell, president of US Steel from 1911–1932, co-founded India House in 1914 with Willard Straight, an investment banker and diplomat. The club was created to serve as a meeting place for men involved in foreign trade and, according to its charter, “create in this country a relation between the bankers and the promoters of foreign enterprises that would make it possible to handle foreign undertaking...” Early governors of the club included the presidents of companies such as Lackawanna Steel, Dollar Steamship, Chase National Bank and United States Rubber. Prominent members throughout the club’s history include President Franklin D. Roosevelt; Secretary of Commerce Harry Hopkins; Secretary of the Treasury Henry Morgenthau, Jr.; New York

Governor W. Averell Harriman and New York City Mayor John P. O’Brien.

The landmark building at One Hanover Square in Lower Manhattan housed India House from when the club acquired the parcel in 1921 until 2022. Completed in 1854, the prior occupants included Hanover Bank and the New York Cotton Exchange. In 1925, the club built the Marine Room, designed by architect and India House member William Adams Delano, which pays homage to maritime trade with decorative architecture depicting shells, fish and seahorses. The club owned an extensive collection of maritime art, which included painting, prints, engravings, relics and rare ship models donated by Willard Straight, his wife Dorothy Whitney and James Farrell. \$



Museum of American Finance Honors Financial Icons at 2023 Gala

By Kristin Aguilera, Deputy Director

ON MARCH 13, the Museum honored the achievements of four financial leaders at its annual Gala. After two years of virtual Galas, this year's event returned to an in-person format at Cipriani 42nd Street, with CNBC Senior Markets Correspondent Bob Pisani and "WealthTrack" Executive Producer and Managing Editor Consuelo Mack serving as masters of ceremony.

More than 525 people attended the event, which raised over \$1.25 million to support all aspects of the Museum's mission to promote financial education by preserving, exhibiting and teaching about American finance and financial history.

The evening began with congratulatory videos by several CEOs who served as Gala co-chairs. MoAF President David Cowen and MoAF Chair Peter Cohen then delivered brief remarks on the Museum's recent accomplishments and future goals.

The awards program began with a tribute to Carol Loomis, who received a Special Recognition honor for her groundbreaking contributions to the field of financial journalism and unprecedented 60-year tenure at *Fortune* magazine. Ms. Loomis was introduced by Warren Buffett, chairman and CEO of Berkshire Hathaway, via video.

Robert Arnott then received the Whitehead Award for Distinguished Public Service and Financial Leadership. This award honors leaders whose contributions in the public and private arenas strengthen society and the advancement of the financial industry. Mr. Arnott—a financial thought leader, innovator and global fund manager—is the founder and chairman of Research Affiliates. He was introduced by Martin Leibowitz, senior advisor to Morgan Stanley and president of Advanced Portfolio Studies, LLC.

The Museum then honored Vincent Viola, co-founder of Virtu Financial and former chairman of the New York

Mercantile Exchange, with the Financial Innovation Award. This award recognizes individuals whose innovation and leadership have transformed the financial services industry and demonstrated outstanding achievement in advancing entrepreneurship and free enterprise. He was introduced by Douglas Cifu, CEO and co-founder of Virtu Financial.

The final award presentation of the evening honored the achievements of Mark Shenkman, founder and president of Shenkman Capital Management and a long-time Museum trustee, who received the 2023 Lifetime Achievement Award. With more than 50 years of investment experience, Mr. Shenkman is considered one of the pioneers of the high yield bond and loan markets. He was introduced by Mario Gabelli, chairman and CEO of GAMCO Investors, Inc.

A video of the full Gala, along with the journal and event photos, can be found at www.moaf.org/2023gala. \$





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1. More than 525 MoAF supporters attended the 2023 Gala at Cipriani 42nd Street. 2. Guests enjoyed a cocktail reception prior to the dinner and program. 3. MoAF President David Cowen welcomed attendees and provided an update on Museum programs. 4. MoAF Board Chair Peter Cohen thanked the sponsors and co-chairs and shared details on the Museum's collection digitization project. 5. Carol Loomis, pictured with Gala Emcees Bob Pisani and Consuelo Mack, received a Special Recognition honor for her groundbreaking contributions to the field of financial journalism and unprecedented 60-year tenure at *Fortune* magazine. 6. Robert Arnott, founder and chairman of Research Affiliates, received the Whitehead Award for Distinguished Public Service and Financial Leadership. 7. Douglas Cifu, CEO and co-founder of Virtu Financial, introduced Vincent Viola. 8. Vincent Viola, co-founder of Virtu Financial and former chairman of the New York Mercantile Exchange, received the Financial Innovation Award. 9. Mario Gabelli, chairman and CEO of GAMCO Investors, introduced Mark Shenkman. 10. Mark Shenkman, founder and president of Shenkman Capital Management and a long-time Museum trustee, received the Lifetime Achievement Award.



By Brian Grinder and Dan Cooper

THE FIRST PRESIDENT of the United States has attained such a mythical and legendary status that an examination of his personal finances seems almost mundane. However, George Washington overcame many financial challenges as he struggled with the birth pangs of a new country. This was a remarkable feat because those very same challenges spelled financial doom for other Virginia plantation owners, including those who followed him into the White House.

Washington relished life at Mount Vernon. Farming was in his blood, and his intense curiosity led him to engage in a scientific approach to farming that allowed him to innovate without taking excessive risks. He understood the importance of diversification and was quick to realize that raising tobacco, which was the standard crop on most Virginia plantations, was a loser's game.

The mercantile system in place when Washington took control of Mount Vernon severely restricted the colonists' ability to sell their tobacco crops. All sales were restricted to England, where colonists were forced to employ British brokers to sell their crops. It soon became

The Personal Finances of Presidents, Part 3: George Washington

apparent to Washington that his broker, Robert Cary & Co.,¹ did not have his best interests in mind because his tobacco consistently sold for less than expected.

To make matters worse, when it came to purchasing goods from England, Washington was forced to rely on Cary & Co. to buy those goods and ship them across the Atlantic to Mount Vernon. Invariably, these British products were of poor quality and were overpriced. Underpriced tobacco sales combined with overpriced goods from London left Washington, and every other plantation owner in Virginia, in debt to their British factors. According to Washington chronicler Edward Lengel, Washington was shocked when, in 1764, he realized that his debt to Cary & Co. had reached £1,800.

The perturbed Washington determined to free himself from the constraints of the mercantile system. After considering several alternatives, Washington decided to stop growing tobacco and grow wheat instead. Wheat, unlike tobacco, could be sold locally. It grew well at Mount Vernon and required less labor than tobacco. Washington made another good financial decision at this time when he decided to curtail his purchases of British goods and become as self-sufficient as possible. This was a difficult decision, since many of the luxury goods the Washingtons wanted could only be purchased from England under the mercantile system. These difficult decisions, however, helped Washington slowly extinguish his debt.

Wheat

Washington's first wheat crop was harvested in 1764 and sold in Virginia. Two years later, he was no longer growing tobacco on his Mount Vernon estate, although he continued to grow some tobacco on the vast Custis properties, which he managed for his wife Martha's children from her first marriage to Daniel Parke Custis. Although Washington was satisfied with his wheat

venture, he soon realized that he could add value to this endeavor by processing wheat into flour. This meant building a new state-of-the-art gristmill.

The mill was built on his Dogue Run Farm with millstones of superior quality imported from France. The mill ground wheat quickly and efficiently, and Washington was soon selling his high-quality flour throughout Virginia. In his book *George Washington, Entrepreneur*, John Berlau writes, "Washington...pioneered in the distribution of branded food products by attaching the 'G. Washington' imprint to all his bags of flour." Washington brand flour soon became the flour of choice in the colony because of its consistently superior quality. That superior quality allowed Washington to charge premium prices, which quickly led to profitability.²

Land

Land was an important part of Washington's financial strategy. His belief that investing in land was a sure source of wealth probably stemmed from his experience as a land surveyor. Young George Washington traveled all over Virginia in his capacity as a surveyor. The vast tracts of undeveloped land he encountered, along with his realization that immigration to the American colonies was likely to increase, led him to purchase and obtain land throughout his life.

Washington's first land purchases occurred in 1750 while he was still a surveyor. In that year, the 18-year-old Washington managed to purchase 1,459 acres. At the tender age of 20, Washington owned over 4,000 acres outright. At first, his purchases were limited to Virginia, but they eventually expanded to Ohio. His interest in Ohio lands began when his older brother, Lawrence, joined a partnership to form the Ohio Company. Although nothing came of this endeavor, George Washington followed the company's activities closely.

Portrait of George Washington
by Joseph Wright, 1784.



Lithograph of George Washington standing among field workers at Mount Vernon, by Junius Brutus Stearns, circa 1853.

When Washington left his surveying business to join the Virginia militia during the French and Indian War, he was able to see the Ohio River Valley for himself. After King George II set aside lands in Ohio for veterans of the war, Washington quickly took advantage of the grant and was eventually able to secure about 30,000 acres through the land grant process.

Although his holdings in Ohio were vast, Washington faced several obstacles in developing them. Relations with Native Americans in the area deteriorated to the point that it was too dangerous to settle there. Squatters also moved in on Washington's land holdings and caused no end

of trouble for him. Incompetent managers on Washington's far-off land holdings often impeded their development and delayed the opening of these lands for settlement. Nevertheless, Washington persisted and was able to build substantial wealth from his Ohio land holdings.

Washington also invested in the Great Dismal Swamp Land Company in 1763. The company intended to develop the last undeveloped tract of land in the Virginia Tidewater. Washington hoped to harvest timber from the swamp and transform the swamp's rich soil into productive farms. The risks were substantial, but Washington carefully weighed those risks before

making the investment. Unfortunately, the Revolutionary War interfered with the company's development plans.

Land was the bedrock of Washington's wealth. He understood its enormous potential and invested aggressively. Although there were many setbacks, his vast landholdings would ultimately reward him with great wealth.

Whiskey

Late in life, Washington decided to build a commercial grade distillery. The idea came from his Scottish-born farm manager, James Anderson; after Washington's



George Washington's grist mill in Mount Vernon, Virginia.



Gears for transmitting power from the water wheel to the grind stones in George Washington's grist mill.

careful consideration, a distillery was built. The whiskey was produced from grains grown at Mount Vernon. In a few years, Washington was producing thousands of gallons of whiskey. In 1799, his profit from whiskey sales was \$7,500.

Fish, Clothing, Mules and Inventions

Washington, a serial entrepreneur, was constantly on the lookout for new ideas. He opened a successful fishery on the banks of the Potomac. His goal of self-sufficiency led him to produce clothing at Mount Vernon, which not only provided clothes for the residents of his estate, but also became a source of revenue. Washington also obtained a breeding donkey from King Charles III of Spain and began a mule breeding business that spread mules all across the South.

As an inventor, Washington designed his own plow. He conceived and built a 16-sided barn, which included an ingenious design for threshing wheat. He encouraged, and often invested, in other inventors' ideas and abandoned his own plow when another inventor came up with a better design. He was constantly on the lookout for new machinery that could

be used to lower production costs and improve quality.

Enslavement

Everything that happened on Washington's farms relied on the toil of enslaved people. At the time of his death, there were 123 people at Mount Vernon directly owned by Washington, plus 193 enslaved persons from the Custis estate. Over time, Washington came to the realization that slavery was economically unfeasible. Unlike Thomas Jefferson, Washington found a way to liberate the people he owned. In his last will and testament, he not only liberated them, but made special provision for the very young and the very old. According to Lengel, Billy Lee, Washington's body servant, was given a lifetime annual annuity of \$30.

In spite of his conclusions on the economic infeasibility of slavery, Washington aggressively pursued runaway slaves. When Ona Judge ran away during Washington's presidency, Washington used questionable methods in an unsuccessful attempt to secure her return. Judge, who was not freed after Washington died because she was part of the Custis estate,

fled from Philadelphia to Portsmouth, New Hampshire, where she lived as a fugitive for the rest of her life.

It is ironic that in 1783, as General Washington was entering New York City as its liberator, Daniel Payne, Harry Washington and a young woman known as Deborah were on ships preparing to be evacuated from New York. All three had fled from Mount Vernon to the British army and freedom during the Revolution. The British navy took them to Canada, where they would maintain their status as free people.

Risk

Lengel argues that "when it came to large sums of money, Washington was an educated investor rather than a gambler. When opportunities arose, he would take their measure firsthand rather than relying on biased third-party information." Although he occasionally took on risky ventures, the risk of his overall portfolio of assets was low to moderate.

One of the greatest risks Washington took was agreeing to lead the Continental army. This not only entailed great risk to his life, it also devastated his finances and



Reconstruction of George Washington's 1797 distillery near Mount Vernon, Virginia.



Recreation of the 16-sided barn at the Pioneer Farm at Mount Vernon. The original farm structures were built between 1792 and 1795, and the reconstructions were completed in 1996.

left his neglected Mount Vernon in a sorry state of disrepair. Washington spent the years between the war and his assumption of the presidency shoring up his financial situation. According to historian Erica Armstrong Dunbar, before leaving Virginia to take up the office of President, Washington was forced for the only time in his life to borrow money at interest (£600 at 6%).

In his book *Dealmaker-in-Chief*, Cyrus A. Ansary argues that Washington's entrepreneurial activities "served as the chrysalis of the astonishingly prescient economic policies he put in place as the first President of the United States. His carefully crafted economic blueprint for the country and his determined execution of its ingredients during his two terms in office...enlarged the dreams and opportunities of Americans, led to a flourishing entrepreneurial climate and made an inspiring tale for our time." Those economic policies, along with the establishment of a sound financial system under the auspices of Alexander Hamilton, set the stage for unprecedented economic expansion.

Lengel estimates that at his death on December 14, 1799, Washington, one

of the wealthiest men in America, was worth about \$780,000. His determination to buck the mercantile system, go all out for independence and embrace scientific farming practices and principles set Washington apart and allowed him to succeed financially while others in the same situation largely failed. An enthusiasm for farming and an endless curiosity pushed Washington to innovate and diversify without taking undue risks.

Washington set the standard politically and financially for subsequent Presidents to follow. Few of his successors have exceeded those standards. 💰

Brian Grinder is a professor at Eastern Washington University and a member of Financial History's editorial board. Dr. Dan Cooper is the president of Active Learning Technologies.

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Notes

1. Washington's relationship with Robert Cary & Co. began after his marriage to Marth Dandridge Custis. Cary & Co. had represented the Custis family's business dealings in the mother country for years.
2. The Mount Vernon website states, "According to Washington's records in 1799, superfine flour could sell for \$8.50 a barrel as compared to \$7.50 to \$8.00 a barrel for fine flour, \$6.66 per barrel for lower grade 'middlings' and \$1.50 a barrel for 'shipstuff'—the lowest quality."



What I Learned About Investing from Darwin

By Pulak Prasad

ALL INVESTORS make two kinds of mistakes. The first kind—dubbed a type I error by statisticians who can never be blamed for being creative—occurs when a person makes a bad investment because they erroneously think it is a good one. It is the error of committing self-harm and is also called a false positive or error of commission. A type II error occurs when a person rejects a good investment because they erroneously think it is bad. This is the error of rejecting a potential benefit and can be termed a false negative or error of omission. Every investor, including Warren Buffett, makes these two errors on a regular basis. They either harm themselves or walk away from a great opportunity.

As any statistician will tell you, the risk of these two errors is inversely related. Minimizing the risk of a type I error typically increases the risk of a type II error,

and minimizing the risk of a type II error increases the risk of a type I error. Investors can't have their cake and eat it, too! They need to choose to be more sensitive to making one type of error while living with the consequences of making more errors of the other kind. What should one do?

In other words, which of the following investment strategies should a person use: (1) making a lot of investments so as not to lose out on some good opportunities and, as a result, living with some failed investments, or (2) being highly selective to avoid making bad investments, thereby missing out on some good investments?

Let's turn to evolution to seek the answer.

Seeking Answers Through Evolution

The goal of *all* animals is to survive for as long as possible, at least until they

reproduce. In the animal world, everyone is both prey *and* predator. Yes, even *Homo sapiens*. How are humans prey? Remember COVID-19?

Let's start with the prey. A type I error for a prey animal would equate to inflicting sufficient harm on itself to compromise its fitness.

Let's take the case of an adult male deer who is thirsty and is near a watering hole. Borne by instinct or experience or both, the deer knows that the watering hole could sound its death knell if a lion or leopard or crocodile is hiding, waiting for the opportunity of an easy meal. If the deer chooses to approach the watering hole, it slakes its thirst quickly and then moves away. And if it mistakenly draws near while a predator is ready and waiting, its life ends.

From the fossil record, we know that the deer that we see today evolved from ungulates about 15 to 30 million years

ago. They have survived millions of years amid ferocious predators by being *very* sensitive to making type I errors—errors of not being too careful. Obviously, some individual deer do end up making the fatal error of commission by drinking at watering holes when predators are present, but the species as a whole has done remarkably well.

If you have seen African wildlife videos or gone on a safari, you will have noticed how vigilant wildebeests, antelopes, zebras and other herbivores are. They seem to see danger where there is none. But it is this alertness that has allowed them to survive and thrive for millions of years. A type I error of underestimating a threat could be the last error one of these animals makes.

But there is a significant trade-off to the approach of minimizing the risk of type I errors: the deer make many more type II errors. A type II error, or the error of omission, means avoiding a watering hole where no predator is waiting. In some cases, a type II error may turn out to be a fatal mistake. A thirsty deer may not be able to run quickly enough to escape a predator, but *on average*, making this trade-off in favor of reducing the number of errors of self-harm has worked quite well for the species.

Let's now turn our attention to the predator. The predator, too, can make two types of error: It can commit itself to killing prey that turns out to be too dangerous or too large or too fast (type I error), or it can refrain from attacking prey that it could easily have killed (type II error). Which error do you think a predator makes more often?

A cheetah is the fastest mammal on Earth and routinely achieves speeds of 80 to 100 kilometers per hour while chasing prey. It usually preys on smaller animals like birds, rabbits and small antelopes, and will *never* attempt to kill an adult water buffalo, a favorite prey of lions. The cheetah is simply trying to avoid getting hurt. Committing a type I error will lead either to death—water buffaloes can turn on their hunters aggressively—or wasted energy, when a cheetah chases an antelope that was too far away to begin with.

These mistakes, in turn, will lead to hunger and poorer hunting performance. The fact the species has been successful for eons demonstrates that cheetahs, as a species, have not committed too many type I errors. A type II error for a cheetah would

mean not chasing prey it should have. This would leave the cheetah and maybe even her babies hungry, but they would all live to see another day.

Natural selection among animals is incessant and merciless and has produced millions of species, all of whom adhere to this simple principle: Minimize the risk of committing type I errors to curtail the risk of injury or death, and learn to live with type II errors or foregone benefits.

Buffett's Two Rules of Investing

As one should expect, Warren Buffett figured out these lessons from evolutionary theory before almost everyone else. He famously coined his two rules of investing as follows:

Rule number one: Never lose money.

Rule number two: Never forget rule number one.

But wait a minute. What does he mean by commanding us to “never lose money?” How can one *choose* not to lose money? Isn't that what every investor wants? Why would any investor deliberately wish to lose money?

In fact, Buffett seems to have violated his own two rules on many occasions. For example, in 1993, Berkshire bought Dexter Shoe for \$433 million in Berkshire stock. As he detailed in his 2007 annual letter, “What I had assessed as a durable competitive advantage vanished within a few years... I gave away 1.6% of a wonderful business—one now valued at \$220 billion—to buy a worthless business.” In his 2014 annual letter, he admitted his mistake in Berkshire's Tesco investment.

Despite losing money occasionally, what is he asking us to do when he orders us not to lose any? Buffett has never explicitly explained this (at least I have never found an explanation), but this is what I think he means: *Avoid big risks*. Don't make type I errors. Don't commit to an investment in which the *probability* of losing money is higher than the probability of making money. Think about risk first, not return.

The definition of “risk” used here is not the same as the one defined by corporate finance theorists. Finance theory claims that risk is the chance that the actual investment return will *differ* from the expected investment return. Thus, if an asset is highly volatile, it will be classified as riskier than an asset that is not as

volatile. If you think about this, you will conclude that this is nonsensical. For any investor, risk should simply be the probability of incurring a capital loss.

As Buffett's diktat shows, he is focused on minimizing risk and, in doing so, has become the envy of the entire investment world, which seems obsessed with running after every half-baked business idea. Buffett is the best investor in the world because he is the best *rejector* in the world.

It's all well and good to assert that we should learn from the evolutionary success of animals and investing success of Buffett to avoid big risks to become better investors. But how? What is a big risk? It is not clear that a definition is possible or even desirable for a practitioner. Instead of defining “big risk,” below are the kinds of situations that should be avoided.

Be Wary of Criminals, Crooks and Cheats

People don't change. Especially criminals, crooks and cheats. An investor should have no interest in a business owned or run by someone who defrauds customers, suppliers, employees or shareholders. When presented with such a person or business, don't ask if the business is cheap enough for the risk to be mitigated; don't ask if the individual could be persuaded to change; don't ask if the crimes are too trivial. Simply walk away.

Avoid Turnarounds

Imagine a tennis match where Roger Federer is playing John, who is ranked 500 in the world, and you are asked to bet 5% of your wealth on John winning the match. Before the match starts, in a face-to-face meeting, John makes an impassioned plea asking you to ignore his ranking and recognize his innate talent. He speaks very eloquently and makes a slick PowerPoint presentation on his plan to defeat Federer. Would you bet 5% of your wealth on John? Hopefully not.

But this is *exactly* what happens in the world of investing. Managements that have underperformed for long periods are able to convince investors to bet on their business with nothing but fancy promises and McKinsey reports. I blame neither management nor McKinsey because optimism is not a crime. But I do get baffled at investors who, despite having access to



A cheetah hunts for food. For a cheetah mother, a type I error can lead to the death of her offspring. The fact the species has been successful for eons demonstrates that cheetahs, as a species, have not committed too many type I errors. A type II error for a cheetah would mean not chasing prey it should have. This would leave the cheetah and maybe even her babies hungry, but they would all live to see another day.

data that amply demonstrates the incompetence of incumbent management, are willing to bet their clients' money on the hope that this same management will suddenly morph into industry beaters in the near future. More often than not, the dream scenario hyped up by the management morphs into a nightmare.

Avoid Debt

Corporate finance theory has a thing for leverage. For those who are not familiar with it, finance academics claim that companies need to have an "optimal" level of leverage to improve returns. If a company can borrow money to purchase assets, its return on equity and earnings per share would improve. Mathematically, this is undoubtedly true. Realistically, this is undoubtedly dangerous.

What could be more important than improving short-term return on equity and earnings per share for a business?

Two things. First, survival. There is no point in improving return on equity by a few percentage points if it compromises long-term survival. The COVID-19 crisis demonstrated clearly that the companies caught with their pants down were the ones with substantial leverage.

The second reason to avoid leverage is this: debt diminishes strategic flexibility and, hence, long-term value creation. For a day-trader or even an investor whose holding period ranges from 3-5 years, a reasonable level of leverage may not matter. But for a permanent owner, any constraint that does not allow a business to take calculated strategic bets is undesirable.

The notion of "optimal" capital structure that requires companies to have leverage and is espoused by corporate finance theorists is not just wrong, but dangerous. A strong balance sheet is not the one that maximizes debt to minimize the cost of capital, but the one that minimizes debt to maximize the safety of capital.

Ignore M&A Junkies

Nothing happens in well-oiled businesses on a day-to-day basis. Sorry, a lot happens, but it's largely mundane, repetitive, uninteresting, dull, monotonous. What would be the best way for such a business—or any business for that matter—to get reported in the *Wall Street Journal* or the *Financial Times*? M&A. In industry parlance, "mergers and acquisitions." For some reason, the media loves the news of one business merging with or acquiring another one. The investment bankers and financiers who make fat fees love them even more. The CEO is also typically then invited to a CNBC interview where they will extol the virtues of "strategic fit," "synergies" and other boiler-plate platitudes uttered in every single M&A. They are almost always wrong. Most mergers and acquisitions fail.

There is a *lot* of literature available on the high failure rate of M&As. A study by Great Prairie Group cites studies from



Berkshire Hathaway CEO Warren Buffett, who figured out the investing lessons from evolutionary theory before almost everyone else.

McKinsey, Harvard Business School, Bain and the Wharton School of Business to state that the M&A failure rate is over 70%. If a business is a serial acquirer, stay away. You can't price this risk.

Don't Try to Predict Where the Puck Will Be

What is common between mid-19th century railways and late 20th century dot-coms? The potential for enormous value destruction wrought by a fast-changing industry.

The path to creating wealth in rapidly evolving industries is treacherous, and it's best to avoid walking on it. Many investors are slaves to the famous quote of the hockey legend Wayne Gretzky, "I skate to where the puck is going to be, not where it has been." But in fast-changing industries, nobody really knows who will win, when and how. And to draw the parallel from the hockey game, since you don't know where the puck is going to be, it's best

to refuse to play in industries that aren't stable, predictable and boring.

Don't Align with Unaligned Owners

As outside and passive owners, investors want the company owner to align their interest with the shareholders. Strange as it may sound, not every owner has this same objective. There are broadly three categories of owners to avoid in order to mitigate type I risk.

First, government-owned businesses. A long-term investor's aims are typically not aligned with the government. It is not that the government objectives are "wrong"—they make sense in the light of multiple constituencies they need to satisfy. They are just different from investors' objectives.

Listed subsidiaries of global giants should also be avoided. Global MNCs like P&G, Unilever, Siemens, Cummins, Nestle and many others have locally listed subsidiaries. There is a *structural* problem

with this arrangement because the parent is interested in its *own* value creation and not that of the subsidiary.

Lastly, it is best to avoid conglomerates. Value creation is possible only through sustained focus. So how does one achieve excellence across multiple entities across entirely different industries? It's hard, but not impossible. Maybe a conglomerate will succeed in creating great businesses across their entire portfolio one day, but that glorious future is not worth the wait. **\$**

Pulak Prasad is the founder of Nalanda Capital, a Singapore-based firm that invests in listed Indian equities and manages about \$5 billion. This article was excerpted from Chapter 1 of his book, What I Learned About Investing from Darwin (Columbia Business School Publishing, May 2023). Copyright © 2023 Pulak Prasad. Used by arrangement with the publisher. All rights reserved.



EASY MONEY

The Invention of Modern Currency in 1690 Massachusetts

By Dror Goldberg

MODERN CURRENCY is paper money and token coins that are legal tender for debts and taxes but have no relation to gold. This has been the physical and legal character of our currency since 1971, when President Richard Nixon suspended the right of foreign central banks to convert dollars they held into gold. Although paper currency is declining in favor of electronic payments for purchases, it is still the legal foundation of the monetary and financial system, most of which consists of promises to pay “dollars.” As far as courts are concerned, this means legal tender currency, which was invented in 1690 Massachusetts.

This is not only “one of history’s great inventions,” as economic historian Richard Sylla has described it; it is perhaps the most consequential financial invention for which America has received no credit. The story of that invention also has relevance for some of the contentious monetary issues of the 21st century: Bitcoin and other cryptocurrencies, Modern Monetary Theory (MMT) and the structure of the Federal Open Market Committee.

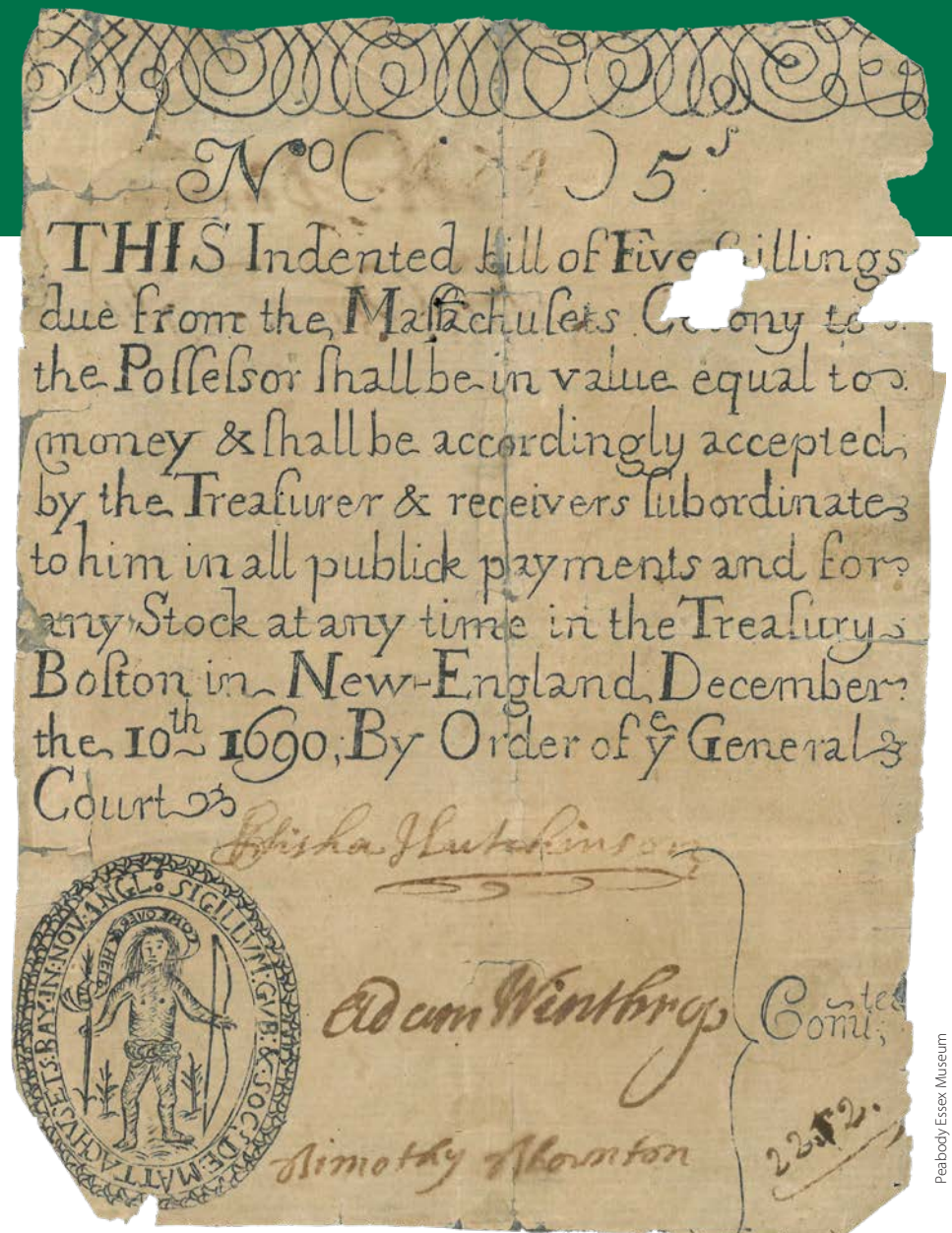
Paper money *per se* is older than Massachusetts. A millennium ago, China invented it, and there were later isolated cases in Western civilization. Even in America before 1690 there were paper currencies, during military emergencies

Portrait of Councilor Elisha Hutchinson, head of the Massachusetts Open Market Committee.

in Dutch Brazil and French Canada and on a regular basis in English Antigua. However, they were all legally tied to intrinsically valuable goods and services. In most cases, they relied on the issuer's promise to provide definite amounts of goods to the bearer, be it gold and silver coins in Canada or tobacco in Antigua. In some cases, the provision of goods and services for paper money was imposed on private sellers under penalty, be it a fine as in Canada, or the death penalty as in Mongol-occupied China.

In 1690, Massachusetts devised an alternative that legally relied only on the paper's circulation into and out of the treasury of the state. This paper money was, in modern terms, legal tender for taxes. In 1692, the money's status was expanded as legal tender for debts. Why 1690s Massachusetts? The colony of 50,000 people at the edge of Western civilization is infamous for stern Puritanism and the Salem witch trials. It was not quite the natural place for a revolution in the very nature of money. That might have been expected to happen in the veteran, contemporary and emerging financial centers of Europe—Venice, Amsterdam and London, respectively. The explanation of this odd anomaly is a combination of other anomalies: The economic circumstances of early colonialism, the turbulent 17th century in England and the unusual population that settled in Massachusetts.

The beginning of orderly economic activity in English America, after the Roanoke failure and the travails of Jamestown, was when John Rolfe, the English explorer and Pocahontas's husband, succeeded in growing commercial tobacco in 1610s Virginia. In the ensuing tobacco rush, planters were desperate for European goods and food. Therefore, when European ships came for their tobacco, the planters exchanged it, as well as most of their coins, for European products. As a result, very few coins remained for domestic circulation. Tobacco quickly emerged as an alternative currency.



The only surviving example from the first batch of currency, dated December 10, 1690.

Even the colony's budget was expressed in pounds of tobacco. The pattern repeated itself in all the non-Iberian colonies: maize in Plymouth, sugar in Barbados, boards in Maine, beaver furs in Canada and whale-bones in Long Island. Each colony adopted its main product as money.

Massachusetts, formally a chartered company, began in 1630 with the same pattern, adopting both grains and beaver furs as official currencies. However, it quickly began to seek out better forms of money, as well as currency alternatives. Why? Because these Puritans were different immigrants. They did not consist of a few

adventurers and many poor people seeking economic opportunity. They belonged to the middle class and had everything in life except for religious freedom. They founded a market society with mostly wage earners, rather than servants and slaves. They included merchants who were disappointed by depleted beaver sources; thus, they turned Boston into North America's trade hub where goods from all across the Atlantic were exchanged.

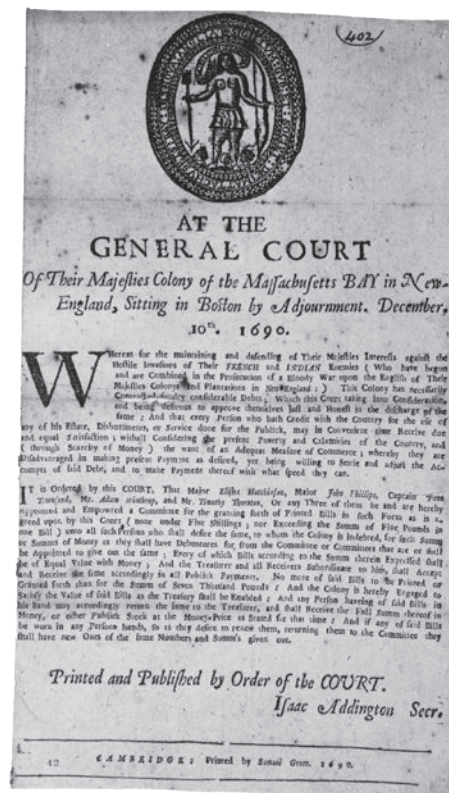
They had many ministers and other college graduates who quickly founded Harvard College with a library and a printing press—the first of their kinds in English

America. The political elite—men such as John Winthrop and Thomas Dudley—had hands-on experience in law and finance at the level of manorial and nobility estates. They were well-versed in bills of exchange, mortgages and all manners of settling debts without coins. Such people needed better forms of payment, and they had the ability to devise alternatives.

The sequence of inventions is staggering, relative to the passiveness of other colonies. In 1631, Massachusetts made all “bills” assignable to third parties. This simple order, possible only in a New World, threw out the window centuries of legal differences between all sorts of financial instruments in England. It enabled anyone’s IOU to be passed on and function as a form of payment. In 1635, lead bullets were made legal tender for small debts. In the 1637 Pequot War, Massachusetts gained access to Long Island Sound, which was the production center of wampum (the seashell jewelry/money of Native Americans). Immediately, Massachusetts made wampum legal tender for small debts. In 1639, bullion brought by privateers was legalized for tax payments. In 1642, Massachusetts became the first colony to recognize foreign (Spanish and Dutch) coins and to encourage their imports—an old European device. Soon private paper money circulated. The abolition of monarchy in England annulled the royal minting prerogative, leading Massachusetts to be the only colony to open a mint (in 1652).

Royalty returned in 1660, and from 1676 King Charles II pressed Massachusetts on the issue of the independent mint, whose continued operation was seen by royal officials as high treason. The legal tender status of the local coins, debased by 25% compared to English coins, was also a problem for England. The mint was shut down in 1682. Shortly beforehand, a first private bank started operations in Boston. It was a bold attempt to implement the hottest financial idea in England—the land bank. It was a bank without coins that catered to people who had wealth in the form of land, but no liquidity. Customers deposited land titles and received in return loans in the form of the bank’s paper money that had small, round denominations.

The bank ceased operations in 1683, perhaps because England threatened to abolish all land titles in the renegade colony. In 1684, Charles II revoked in



Broadside of the law authorizing the first legal tender currency, dated December 10, 1690.

court the charter of the Massachusetts Bay Company. In 1686, a dictatorial regime—the Dominion of New England—was imposed by the new king, James II. Another attempt at a land bank was made, but it was aborted as soon as the English dictator, Sir Edmund Andros, invalidated all land titles.

With local coins gone and bank projects in ruin, in 1688 Massachusetts was not much better, in terms of its existing currency, than when it was founded in 1630. Some English coins and grains still facilitated daily transactions within the colony. But the extreme monetary laboratory that operated there during these six decades was not entirely in vain. The shocks of both the new environment and England’s constitutional upheavals caused Massachusetts to accidentally replicate humanity’s monetary history in 60 years: seashell jewelry, grains, uncoined precious metal, coins and bank notes. As a merchant republic, Massachusetts was already similar to other hubs of financial innovation—Venice and Amsterdam. The opportunity to make a novel step forward soon arrived.

The Glorious Revolution in England (1688–1689) inspired a revolution in

Boston, which dismantled the Dominion and restored the charter government *de facto*. The Glorious Revolution also involved the English colonies in a first war with French Canada. The revolutionary Massachusetts government lobbied the monarchs William and Mary to restore their charter at the same time that they launched expensive attacks on Canada. In the fall of 1690, Massachusetts tried to occupy Quebec City, counting on the expected plunder to finance the soldiers’ wages. But the mission failed, and the returning soldiers demanded pay.

The amount of money needed to pay wages to thousands of soldiers for their three-month service was too much. The government increased taxes enormously, but it would have taken a long time to collect them (in coin, grains and other goods) in a difficult winter after so many working men had been absent. The government knew that Canada itself was issuing paper money (manually, from playing cards). Technically, with its printing presses, Massachusetts could easily outdo Canada. However, Massachusetts had a constitutional problem. William and Mary, considering restoration of the colony’s charter, would not have been happy seeing Massachusetts once again violating the royal monopoly on money creation. Massachusetts could not impose new money on debtors as legal tender, as it had done with local coins. It certainly could not go a step further and force all sellers to accept a new money under penalty, as in Canada.

The merchants and intellectuals leading the colony had learned from their numerous experiments that an object is more likely to be money if the government itself accepted it for tax payments. Each soldier held a single “debenture” stating the colony’s debt to him, so the legislature made the debentures legal tender for taxes. That wasn’t enough because each debenture was for a large, non-round sum (a three-months wage). The solution was then to offer each soldier to sell his single debenture back to the government in exchange for several “bills” of small, round denominations that would be convenient for shopping, with the same total face value. Today we call this an open market purchase. No private party was forced to accept the bills—not sellers in the markets, not even the soldiers who could wait for tax proceeds to be collected. Sellers-taxpayers were informed that they

could discharge their enormous tax obligations with these “bills.” Officially, it was not money at all, and thus England was expected not to care.

The bills were enacted into law on December 24, 1690, and printing soon began. Lacking the bureaucracy of an Old World state or a modern country, the Massachusetts legislature regularly assigned any work of importance to an executive committee. Such committees normally included members from both houses of the legislature (the upper house, the Council, was also the supreme executive authority). Very often, committees also included private men who were experts on the relevant issues. It was thus entirely natural for the bills to be handled by a committee of five men: Councilor Elisha Hutchinson, Treasurer John Phillips, the speaker of the lower house and two former bankers. As usual in Massachusetts financial committees, all these men were merchants from the Boston area, as there were no greater financial experts around. The committee had considerable discretion regarding the quantity, denominations and timing of the issue of the bills. Its actions could affect inflation. Since the committee conducted open market purchases, I call it retroactively the Massachusetts Open Market Committee.

While the committee’s appointment was natural for its time and place, it is surprising that its checks and balances were very similar to those of the modern Federal Open Market Committee. The 1690 committee had three men representing the executive and legislature and two men representing the private sector. Today, this ratio is 7:5. While surprising, it is not a coincidence: The American system of checks and balances, which prominently includes the private sector, has been in place long before independence. It was forgotten in the First and Second Banks of the United States and in the original Federal Reserve Act, and may explain why these institutions survived only for a combined period of 62 years. The FOMC has survived since 1935.

The novel money was not immediately understood by the Massachusetts population. Two open letters, by a visiting English financier and by local pastor Cotton Mather, were printed to promote the money’s acceptance. While misleadingly giving Canada’s card money and European banks as relevant examples, the

authors also made the correct point that paying taxes with these bills was merely a setoff operation with the Treasury. Everyone was experienced with setoff as a method of settling debts without coins.

The population was soon convinced, and so the plan worked: The bills were accepted as money, and England did not care. In October 1691, William and Mary granted a new charter to the Province of Massachusetts Bay. Upon the charter’s arrival in 1692, the new government no longer had to fear England’s reaction regarding its money-issuing activities. It therefore made the “bills of credit” (as they came to be known) legal tender not only for taxes, but for any monetary obligation. This is also the legal status of our modern currency.

The same Cotton Mather, as a historian, praised his people’s ingenuity: “In this extremity they presently found out an expedient, which may serve as an example, for any people in other parts of the world, whose distresses may call for a sudden supply of money to carry them through any important expedition.” Indeed, the invention spread to the other English colonies and later to Europe. No longer would kings debase their gold coins to finance wars; the printing presses took center stage.

Gold made a comeback, again and again, to prevent inflation, only to be discarded again during wars. Gold coins disappeared from American shops and homes in the Great Depression. Gold remained behind the scenes, loosely “backing” an ever-increasing amount of paper dollars. Only foreign central banks had the legal right to convert the dollars they held into US gold. The commitment collapsed under the cost of three wars: The Vietnam War, President Johnson’s War on Poverty and the war on gravity (the Space Program). The dollar’s relation to gold lost its credibility, and when Nixon “suspended” the convertibility promise in 1971, he took the entire world off gold. Since then, our currency is Massachusetts currency. The Central Bank Digital Currency that may replace it will be equipped with the same legal status.

The story of 1690 Massachusetts has lessons for the present not only regarding the FOMC, whose structure was recently challenged in Congress (Senator Toomey’s Federal Reserve Accountability Act), but also regarding Bitcoin and “Modern

Monetary Theory.” Both of these hyped post-2008 phenomena make grave mistakes, somewhat opposite to each other, regarding legal tender currency. Bitcoin ideology ignores legal tender status at its peril, and its zealous advocates cannot comprehend why the entire world population still hasn’t switched to it. One major reason is that you can’t pay your taxes in Bitcoin, and no sane money-issuing government would allow that.

MMT economists, on the other hand, understand perfectly well the power of legal tender status for modern money, and it serves as their starting point. They are also correct in the next theoretical step: Because taxpayers must obtain legal tender currency, regardless of the inflation rate, governments can easily make as much money as they want and people will still accept it. And here MMT becomes Weimar-level dangerous: MMT sees this troubling fact as a cause for *celebration*—a cheap device with which to eliminate (not just reduce) *all* social and climatic problems. The prudent conclusion is the opposite: Because modern currency can be abused so easily, we need to be extremely careful. Devices such as independent central banks, politically balanced monetary policy committees with a significant role to the private sector, price stability mandates and formal inflation targets should be employed to avert that great danger. Mather’s above quote may seem like the first MMT pronouncement in history, but in fact the extremely disciplined Puritans increased taxes first and printed money later—at the exact same amount. MMT is all about denying such discipline.

Indeed, modern currency—legal tender notes and coins with no intrinsic value—is a double-edged sword, like any great invention. And a great invention it is, one that should make us revise the common assessment of the finances of colonial America. It wasn’t just about pathetic tobacco currency, chronic inflation and the absence of banking. Colonial America was also the birthplace of modern currency and even of politically balanced open market committees. 💰

Dror Goldberg is the author of Easy Money: American Puritans and the Invention of Modern Currency, published by the University of Chicago Press in March 2023.



Cboe Marks Golden Anniversary

By Howard Baker

FIFTY YEARS AGO, on April 26, 1973, the Chicago Board Options Exchange (Cboe) opened its doors for business, offering investors, for the first time, standardized stock options contracts traded on a national securities exchange. These contracts, covering call options on 16 stocks, introduced the investment world to a number of innovations, including standardized terms and conditions, next-day settlement and an affiliated clearinghouse which issued and guaranteed the performance of all contracts traded.

There are two types of stock options: puts and calls. A call option entitles the holder to buy a fixed number of shares of an underlying security at a stated price on or before a fixed expiration date. A put option entitles the holder to sell a fixed number of shares of an underlying security at a stated price on or before a fixed expiration date. Options are uniquely flexible (versatile) financial instruments with a variety of uses. As instruments of risk transfer, they can be used to increase an investor's stock market exposure with limited, predetermined risk, or to reduce

the financial market risk an investor might have by holding an individual stock or portfolio of stocks.

Before Cboe's launch, options trading was conducted by telephone in the over-the-counter (OTC) market through put and call brokers. Historically, the conventional OTC options market was small, so it was not surprising that many seasoned Wall Streeters were highly skeptical of Cboe's chances for survival. Further, industry conditions at the time of Cboe's debut could hardly have been worse—the stock market was down, trading volume was low and many brokerage firms were consolidating or terminating operations.

OTC options trading in the United States dates back to the late 18th century. During the roaring bull market of the 1920s, options contributed to some serious abuses in the financial markets. Public concern about the contributory role of options in a national financial collapse led to a Congressional probe and the introduction of legislation banning all options trading nationwide. In response, a vigorous lobbying effort educated legislators about the legitimate hedging functions of options successfully avoided an options ban in the Securities and Exchange Act of 1934. Instead, the law authorized the newly formed Securities and Exchange Commission (SEC) to regulate options trading and, at the SEC's urging, the Put and Call Brokers Association was formed as a self-regulatory body to oversee OTC options trading.

Cboe's Beginnings

Cboe's roots trace back to the late 1960s to the Chicago Board of Trade (CBOT), at the time the country's largest futures market primarily dealing in agricultural commodities. To mitigate the ebbs and flows in its grain trading pits, CBOT undertook an in-house effort to find a new product to trade. Ultimately, it zeroed in on the conventional OTC put and call stock options market. For the better part of the ensuing five years, CBOT doggedly pursued a plan to create a listed options market aided by a blue-ribbon advisory committee representing the financial, academic and institutional investor communities. They held numerous discussions and negotiations with regulators, including the Federal Reserve Board, the Commodity Exchange Authority (CEA), state securities commissioners and the SEC, who were concerned as to the impact a new options market might have on the integrity of the existing financial system.

Once it became clear that the SEC would be Cboe's prime regulator, CBOT's governing board, which had always been uncomfortable with the prospect of possibly having two federal regulators (the CEA and SEC) overseeing its activities, decided to spin-off both the Cboe and the Cboe Clearing Corporation as independent entities. As part of the terms of the spin-off, existing CBOT members were granted continued trading rights and privileges on the Cboe while trading

First day of trading at the Chicago Board Options Exchange (Cboe), April 26, 1973.

and clearing memberships were authorized for sale on the new exchange and clearinghouse.

Success Brings Competition

In its initial approval order, the SEC held Cboe on a tight leash, allowing only call options trading on no more than 20 underlying stocks. Despite these limitations, trading volume soon far exceeded projections. If imitation is said to be the sincerest form of flattery, it didn't take long before Cboe had competitors to contend with as the American Stock Exchange (Amex), Philadelphia Stock Exchange, Midwest Stock Exchange and Pacific Stock Exchange all applied for, and received, SEC approval in the ensuing months to enter the listed options business. The New York Stock Exchange (NYSE) and Nasdaq remained on the sidelines for a few years before starting options trading.

Amex was the second exchange to start an options market and was prepared to create its own clearing organization. That proposal was not well-received by the brokerage firm community, which sought to avoid multiple clearing entities. They reached a resolution when Amex negotiated to buy a 50% interest in Cboe's existing clearing arm, which was then renamed The Options Clearing Corporation (OCC). As other exchanges prepared to start their options programs, each purchased an ownership interest in OCC.

The concept that a single options clearinghouse would serve as the issuer and guarantor of all listed options contracts was a crucial innovation that helped ensure the success of options trading in the United States. With OCC serving as the opposite party to all options transactions—the buyer for every options writer, and the writer for every buyer—it became possible for market participants to enter into trades without investigating the creditworthiness of the opposite party or worrying that the opposite party might default.

For buyers of exchange-listed options, the existence of a secondary market meant that those buyers could liquidate (close out) their long positions by entering a "closing sale transaction." Similarly, for option writers, the existence of a secondary market substantially increased their flexibility as they could also eliminate (close out) their contractual liability at any time prior to expiration by purchasing



Cboe Global Markets

Options traders in the early days of the Cboe, 1975.

options with identical terms to the ones previously sold, in a "closing purchase transaction." This combination of interchangeability of options and the severance of direct links between options buyers and writers fostered the growth of an active, liquid secondary market and has been primarily responsible for the success of the listed option concept.

Another reason often cited for the growth and popularity of exchange-listed options trading was the standardization of terms for all traded option contracts. At its core, an option covering 100 shares of a particular underlying stock has three basic characteristics: a maturity (expiration date), a strike (exercise) price and a premium (the price at which the option trades). In the OTC market, each of these characteristics can vary from contract to contract. This contrasts with the listed options framework where the maturities and strike prices are standardized, with only the premium remaining variable to reflect changes in future price movements of the underlying shares.

Having limited Cboe to listing options on not more than 20 underlying stocks, the SEC continued this practice as additional exchanges were approved for options trading. Before expanding the number of listings, exchanges had to satisfy the SEC as to their operational efficiency. The SEC also

required any underlying stock considered for options trading to be either NYSE or Amex-listed.

During the 20-month period before Amex started its options program, Cboe was the only options exchange and enjoyed free reign to select any qualified underlying stock for options trading. However, once the Amex and other exchanges entered the business, it was inevitable that more than one exchange might seek to select the same underlying stock. Just that scenario occurred in 1976 when the Cboe and Amex both selected and began trading options on the common stock of MGIC Corporation. It became the first multiply-traded (dual listed) option and the start of many hotly contested trading battles among the options exchanges which increased in intensity once the SEC permitted listed options trading on popular Nasdaq and foreign stocks.

Competition among the options exchanges yielded certain beneficial changes. This included guaranteed prices for certain size orders (minimum 10 contracts), enhanced order entry systems and a general tightening (narrowing) of price quotes between bids and offers. In 1977, with four years of options trading experience limited to call options, the SEC allowed for a pilot program to introduce puts to the markets. Overall, interest in options grew each year as more retail, professional and institutional customers became attracted to the markets.

A Lawsuit and a Moratorium Threaten Growth

In late July 1983, with more than 10 years of listed options trading completed, an interesting development occurred following the Amex's announcement of its intention to commence options trading on the common stock of Golden Nugget, a popular and actively traded NYSE listed company. Ever since its 1973 approval for Cboe to start options trading, the SEC never required an options exchange to secure the consent of an underlying stock before commencing options trading. The SEC's position was that any options that would be created once trading commenced would be issued by OCC and not the underlying company. Provided an underlying stock met existing options listing criteria, the exchanges were free to trade options on that stock.



The S&P 100 Index (OEX) options pit in 1984 (left) and the Cboe Volatility Index (VIX) options pit in 2006 (right), showing the change in technology on the Cboe trading floor.

Upon selecting a new underlying stock, Amex's practice was to send a welcome letter to each company to inform corporate management of its intention to start options trading. Immediately upon receipt of the Amex letter, the Golden Nugget CEO contacted the exchange demanding that no options trading take place on its stock. The Amex respectfully refused the demand and Golden Nugget commenced a lawsuit in Nevada federal court.

Golden Nugget's contention was not based on any violation of securities law, rather that Amex's failure to secure the company's consent before trading options on its stock constituted a misappropriation of Golden Nugget's property and that it infringed the Golden Nugget trade-name which, in essence, constituted unfair competition. For more than four years, Golden Nugget's suit against Amex and OCC wound its way through the federal courts. At the trial court level, Amex prevailed and, in September 1987, about a month before the market crash, a federal Court of Appeals rejected Golden Nugget's appeal, upholding the lower court's decision.

The increase in options activity among retail investors brought more attention to the options departments at brokerage firms. During on-site sales practice examinations, regulators noted a rise in customer options complaints and arbitration filings and the SEC was troubled

by certain questionable trading activity on the trading floors that attempted to influence volume levels in multiply-traded options. These concerns led the SEC in October 1977 to declare a moratorium on any further expansion of options trading pending the findings of a broad study of the listed options markets. The SEC study lasted more than a year and concluded with the issuance of more than 80 recommendations ranging on issues of options sales practices, floor trading and surveillance, registration and licensing of sales personnel, advertising and net capital requirements, among others.

To address these recommendations, the exchanges formed an Options Task Force composed of representatives from each options exchange, the NASD and the member firm community. The Task Force proposed numerous new rules and procedures that ultimately satisfied the SEC, which lifted the moratorium in 1980 and effectively removed exchange-listed options trading as a "pilot program."

Some of the early post-moratorium actions taken by the SEC included a phase-in of puts trading so every outstanding option class had both puts and calls available; the adoption of an Allocation Plan addressing how new underlying stocks were selected and traded among the options exchanges; and consideration of several new products for trading options

on interest rate securities, foreign currencies, domestic and foreign stock indices and market volatility.

A long-held concern of the SEC in allowing for the expansion of listed options trading was the need to assure that industry personnel were well informed and educated about options products. To address this, exchanges held education seminars, workshops and other instructional efforts directed at both floor trading personnel and upstairs sales representatives. Industry-wide licensing exams for registered and supervisory personnel were expanded to include options, and brokerage firms were further required to identify and qualify those personnel who oversaw customer options account approvals, as well as any other options-related businesses in which a firm might engage. And, to assist in educating individual investors about the responsible uses, benefits and risks of exchange-listed options, OCC created The Options Industry Council to provide free seminars, webinars and other materials.

Academic Curiosity

Appealing not only to investors, options have long been an attractive area for academic study. Possibly the best-known academic effort which, coincidentally, was published just prior to the time Cboe



Cboe trading floor, 1995.



Opening day on the new Cboe trading floor, June 6, 2022.
Pictured here is the S&P 500 Index (SPX) options pit.

started trading, was an option pricing model by Professors Fisher Black and Myron Scholes that was later expanded through the work of Professor Robert Merton. Dan Galai, a doctoral candidate at the University of Chicago when Cboe started, was the first academic to examine the empirical validity of the Black-Scholes model using Cboe's first six months trading data. Over the years, as new options products have been introduced to investors, numerous academics have researched and addressed topics such as options pricing, market structure and market impact, while the SEC has made use of academic reports and studies in helping guide their decision making.

Change Over the Years

Over the years, in response to investor preferences, many modifications have been made to the rules and practices of the options exchanges to permit newly selected stock options to be listed at considerably narrower strike price intervals and more expiration months. In addition, in response to investor requests for longer dated expirations following the market crash in 1987, Long-Term Equity Anticipation Securities (LEAPS) were created with expirations approaching three years.

As both retail and professional stock investors became more comfortable with

low-cost passive investing strategies, options exchanges added index options and Exchange Traded Funds (ETF) to their mix of tradable products. Some exchanges created their own broad market and sector indexes, while others sought license agreements from well-known index providers such as Dow Jones and Standard and Poor's. Since index options were designed to settle in cash upon exercise, rather than by stock settlement, new rules and procedures needed to be adopted to accommodate this feature. Also, most index options were designed with a "European exercise" feature which limits exercise to at or near a contract's expiration.

The introduction of numerous new products has resulted in the current listing of nearly 6,000 underlying stocks and exchange traded funds resulting in more than 1.4 million options series available for trading. In addition, institutional customers who meet certain standards can trade Flexible Options (FLEX), where the terms of those contracts can be customized.

The model of a separate but affiliated marketplace and clearinghouse that Cboe pioneered 50 years ago has been adopted by numerous exchanges across the globe. The success of the US listed options market continues to attract new investors who have become aware of, and comfortable with, the uses (and risks) that options provide. It's highly doubtful that even

the most optimistic Cboe supporter could have ever thought its opening day trading volume of 911 contracts would grow to average 13.6 million contracts a day in 2022. **\$**

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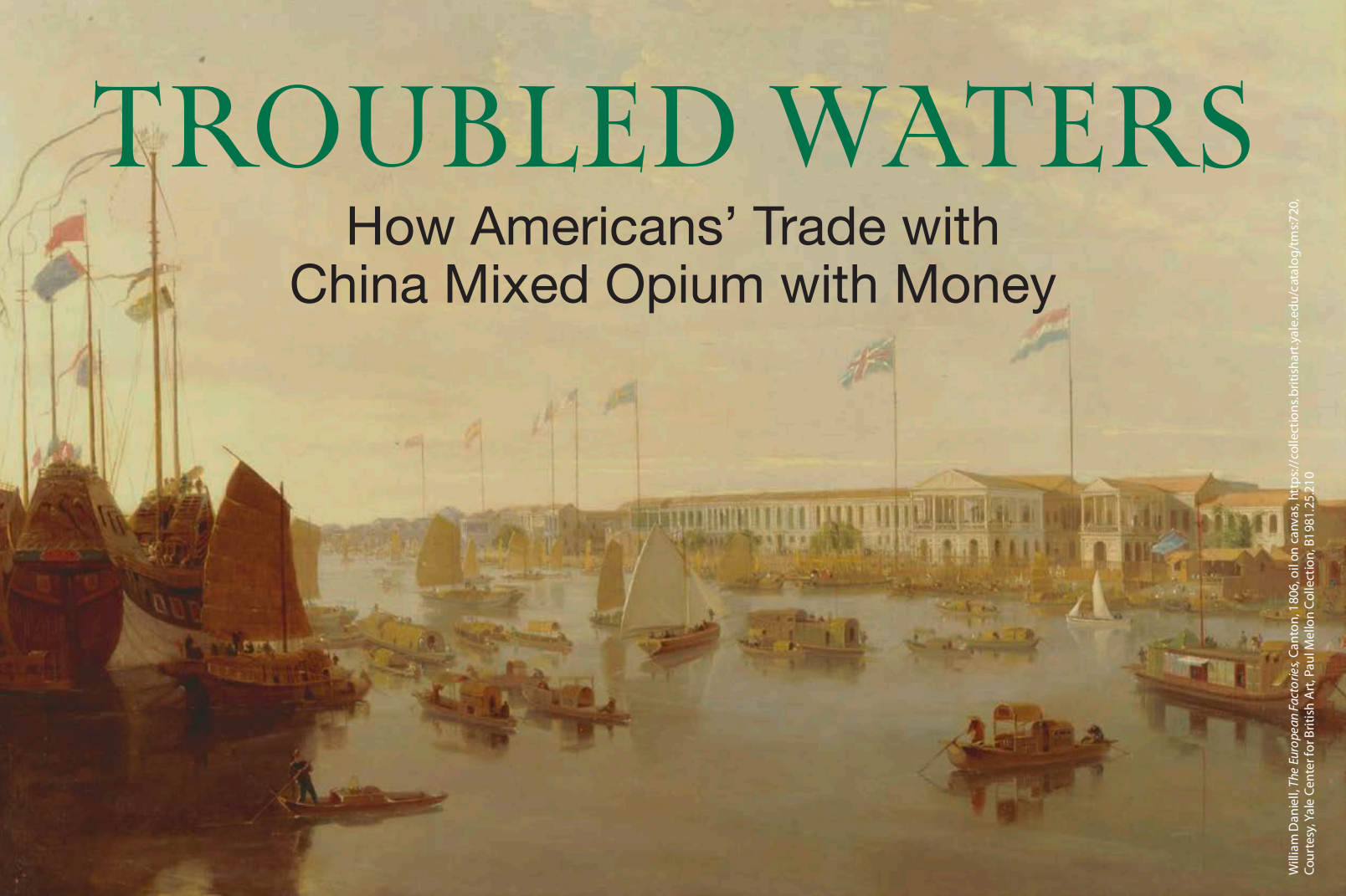
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TROUBLED WATERS

How Americans' Trade with China Mixed Opium with Money



William Daniell, *The European Factories, Canton, 1806*, oil on canvas, <https://collections.britishart.yale.edu/catalog/tms:720>, Courtesy, Yale Center for British Art, Paul Mellon Collection, B1981.25.210

By Dael A. Norwood

WHEN THE SHIP *Congress* sailed from Boston bound for the Dutch colonial port of Batavia in 1824, it went using some old habits, and some new. On the more traditional side of the ledger, Jacob Caswell and Benjamin Brintnall entrusted “one Hundred Spanish milled Dollars” to an agent onboard who promised to “Carey & Invest” it “from port to port.” Using this classic cabotage strategy, Caswell and Brintnall aimed to make the most of limited resources.

William Gray, the *Congress*’s owner, adopted a more sophisticated approach. A fixture of the Massachusetts mercantile elite, Gray let the business relationships he spent a lifetime cultivating guide his investments in the *Congress*. He instructed

the captain of the ship, Nathaniel Kinsman, to consult his contacts in Asia—resident commission merchants—before making any purchases. Gray also stocked the ship using information his network provided. He packed the hold with \$7,786 worth of candles, beef, flour and seltzer water—all readily salable at any European colonial port—and invested \$19,318 in opium, a smokable narcotic with a growing market in Southeast Asia, especially in China’s southern ports. Gray also gave Kinsman access to \$50,000 in credit with his London bankers, Baring Brothers, so he could take advantage of good prices for return cargoes as he encountered them: tea at Guangzhou (Canton), sugar at Manila or cotton at Kolkata (Calcutta). This credit could be accessed via bills of exchange, which Kinsman most likely carried as a packet of preprinted forms—making the *Congress*’s lightest cargo simultaneously its most valuable, modern and secure.

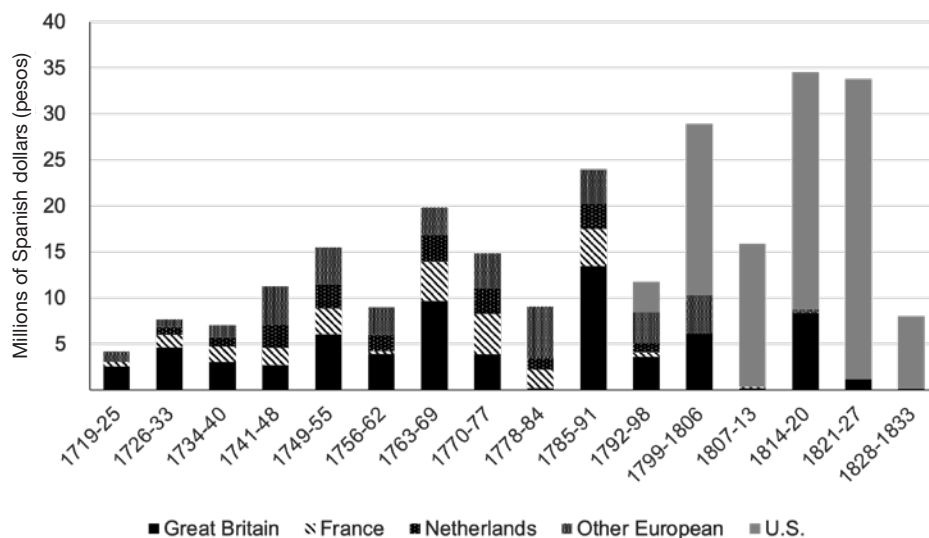
Gray’s cargo in the *Congress* cannily exploited a new global system of exchange

linking American cotton, Indian opium and Chinese tea through the medium of British bank money. Though not centrally directed, this system depended on capital flowing through London-centered networks in the form of silver dollars, bank drafts and bills of exchange. This movement of money had far-reaching consequences. It promoted the development of European empires in the Pacific, and it revolutionized the “China trade,” the maritime shipping business of exchanging products between East Asia and the Atlantic world. It reached the United States, too, funding the expansion of the cotton frontier in the South, wheat agriculture in the West and manufacturing in the North. Interconnected, global and powerful, this modern capitalist system—and Americans’ new role in it—took shape in the aftermath of the Napoleonic Wars.

When peace broke out in Europe in 1815, old systems of political economy broke with it. Before the decades of global warfare between Great Britain and France

An early 19th-century view of the “floating city” of ships on the Pearl River (Zhujiang) at Canton (Guangzhou), with the foreign factories in the background.

Imports of Silver to China, by Country, 1719–1833



Sources: Louis Dermigny, *La Chine Et L'Occident: Le Commerce À Canton Au XVIIIe Siècle, 1719–1833* (Paris: S.E.V.P.E.N., 1964), 2:735; this chart follows the form of “Figure 1: Country Share of China’s Silver imports, 1719–1833 (in pesos),” in Alejandra Irigoin, “The End of a Silver Era: The Consequences of the Breakdown of the Spanish Peso Standard in China and the United States, 1780s–1850s,” *Journal of World History* 20, no. 2 (June 1, 2009): 211.

were decided at Waterloo, American merchants—and the US government—had profited from their status as neutral ship-pers. The end of the conflict meant that these old strategies no longer worked. For American merchants, that meant shifting their activities to support British imperialism in Asia, rather than profiting from filling its gaps. Politicians in Washington, meanwhile, began treating the once celebrated “China trade” as a threat to national security.

This shift was part of a broader reorientation in American politics. After their second war with Great Britain, US leaders came to see relying on trade as an engine for prosperity as more dangerous than useful. From the perspective of the National Republicans ruling Washington in the 1810s and 1820s, only active government intervention could strengthen the nation’s domestic economy sufficiently to withstand—or avoid—the next war. The “American System” that Henry Clay and others championed aimed to create the infrastructure needed to make international trade unnecessary.

One side effect of this shift was that American China traders came under scrutiny for their unique business practices. Annually they shipped millions of dollars’ worth of silver to China. This silver “drain” attracted a great deal of interest from publicists and policymakers concerned

that it was ruining the nation’s currency, and thereby threatening the republic’s stability.

American merchants had shipped significant amounts of silver specie to Asia for decades. Spanish-minted dollars were the only always-welcome commodity in Guangzhou’s markets; and because of the United States’ considerable involvement in Latin American trade, US-based merchants usually had access to a ready supply. But Spanish dollars also held a special place in the American economy. They were legal tender, a common medium for commercial transactions and functioned as a reserve currency upon which banks issued paper bank notes—and thus important to the stability of the money supply.

Silver flows to Asia eventually slowed and then reversed in the 1830s. But in the medium term, the steepest parts of the ramp-up of American silver shipments coincided not only with the new policy regime, but also a major economic downturn, the Panic of 1819. Many contemporaries connected the unprecedented outflow of silver to the instability plaguing the country. The arch-protectionist *Niles’ Weekly Register* even argued that traders to China who exported specie were “destructive merchants...whose business ought to be annihilated” for the trouble they caused.

The infamy of specie exportation proved a stubborn stain, one that dogged the

China trade for decades. But it also became a crucial component of Bank of the United States President Nicholas Biddle’s plan to domesticate global flows of capital for Americans’ benefit—and his bank’s profit.

Biddle was elected to the presidency of the Second Bank of the United States (BUS) in 1822. The bank was a controversial institution: the country’s largest corporation, it alone had the ability to conduct operations in all US states, giving it extraordinary power and, potentially, responsibility. By 1825, Biddle had noticed that each spring China merchants made large annual calls on northeastern banks for silver specie to outfit their adventures. These calls intensified the already significant challenge of maintaining liquidity across the bank’s extensive branch network—and threatened the solvency of smaller banks.

To smooth out these disruptions, in the spring of 1825, Biddle’s bank began selling what he called “E India Bills.” These were bills of exchange issued by the BUS to American merchants that drew on the bank’s accounts with European banks. The BUS’s East India bills were indistinguishable from private bills already used in the China trade—like what William Gray used—but benefitted from having the big bank’s reputation behind them.

Biddle intended his bills to do more than help merchants move money. He wanted to make the bank an intermediary in global finance, capable of absorbing the “sudden and violent fluctuations” of international trade. East India bills provided a means to head off the financial panics that could result when the spread in the price of specie in domestic markets diverged sufficiently from foreign markets to induce silver exports.

Biddle had a chance to test this method in 1825, when a summer slump in cotton prices caused a wave of failures and led the Bank of England to contract its credit—difficulties that sharply increased specie calls on American banks, including the BUS. To head off disaster, Biddle worked the Bank as a “balance-wheel,” selling coin and issuing notes and bills to provide liquidity to other institutions, and counter prevailing market forces. One of his supporters highlighted the success, crowing in a newspaper how Biddle’s “East-Indies” bills allowed the US to “escape from the misfortunes which have overwhelmed the British Empire” in 1825. Ironically, while Biddle intended his bill experiments to protect Americans from



Opium pipe and paraphernalia.

Britain's misfortunes, in China, they accelerated Americans' entanglement in British imperial schemes.

In its first decades of the American China trade, the business decisions for each voyage were managed by a supercargo, a floating agent for the ship's investor-owners who oversaw all transactions in return for a share of the profits. As the business grew, more firms found that having a resident agent in Guangzhou—rather than just aboard a ship—provided an advantage.

Living in the segregated “foreign quarter” neighborhood designated by Qing officials for overseas traders, resident merchants developed a better knowledge of local conditions. Cultivating closer relationships with Chinese business partners, they secured better prices and earned higher profits. After the Napoleonic Wars, the dominant US firms in the trade all relied upon resident merchants, who soon started exploring new lines of business.

No one wrung more from changed conditions than John Perkins Cushing. Cushing ran the Guangzhou outpost of Perkins & Co., a Boston-based merchant firm with representatives all over the world, and quickly made the China office one of the network's critical nodes. During his nearly 30 years in China, Cushing devised new smuggling methods, helping flood Guangzhou with opium and revolutionizing the China trade.

Cushing's new system was a response to British colonial policy. In the late 18th century, the British East India Company noticed a new market for smokeable

opium in Southeast Asia and began forcing Indian peasants to cultivate opium poppies to supply it. Opium provided the company with a new source of revenue and helped balance their purchases of tea in China. The East India Company avoided directly violating China's long-standing bans on opium importation by selling the finished drug to “country” traders in India. These private third parties moved the drug into China proper.

Americans' first experiments importing opium into China used different methods. Excluded from Indian opium sales until 1813, they instead turned to the Ottoman port of Izmir (Smyrna) for their supply. The so-called “Turkey” that Americans imported from the Anatolian coast was of lower quality than Indian opium, but it helped expand the market by contributing to early gluts, lowering prices. When the British East India Company's monopoly on Indian trade was withdrawn in 1813—during wartime—American resident merchants in China got directly into the India business. Cushing was a critical figure, using his firm's capital to float pioneering American dealers in Indian opium, notably Samuel Russell of Russell & Co.

But Cushing didn't just supply loans to opium traders; he built them a system. From his years in residence, he knew that Chinese officials had a tight grip on Guangzhou's official port, Whampoa, but that policing lower down the Pearl River was less effective. So, he and other merchants set up a shadow port around a river island called Lintin, where they anchored warehouse ships to receive opium. In

Guangzhou proper, they sold chits to Chinese brokers, who went to Lintin to pick up the opium before selling to consumers.

Opium imports nearly quadrupled in a decade. The boom cemented the drug as the “keystone” commodity for the China trade, doing for the creation of modern capitalist market dynamics in Asia what tobacco and sugar had done in the Atlantic world. Opium increasingly replaced silver in Western merchants' exchanges for teas and silks in China.

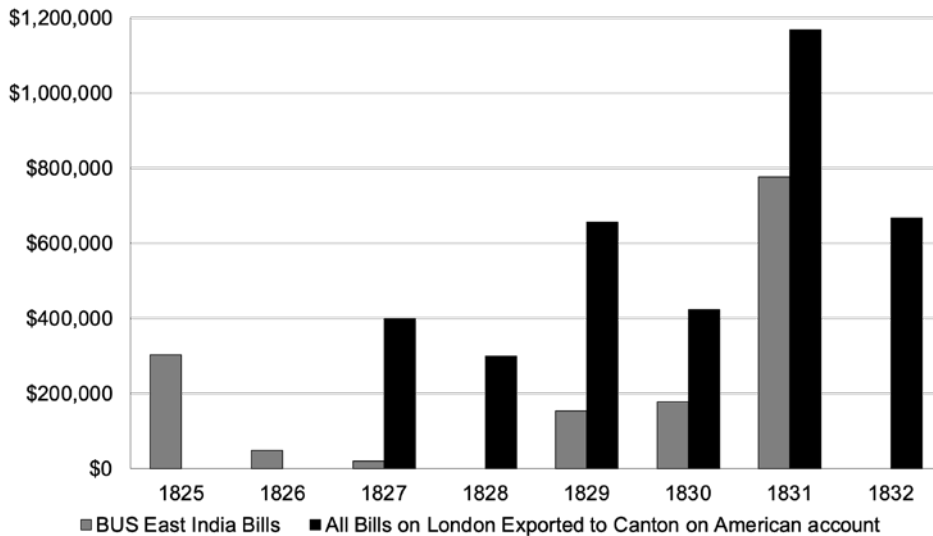
Or, at least, it did so as a trade good. Viscous, bulky and easily recognized as contraband, the drug did not serve well as currency. Instead, credit instruments took the place of silver money—mostly bills of exchange drawn on London. Americans had intermittently used bills before the War of 1812, but started to rely on them more often as their ability to draw on credit in London grew—itsself a result of the growth of Southern slave-grown cotton exports to Britain. Biddle's East India bills accelerated this process.

The rise of bills as a medium of exchange at Guangzhou meant that even those who were not directly involved in the opium trade relied on the infrastructure they created. “[E]very one trading” at Guangzhou, Robert Bennet Forbes explained to his wife Rose, depended on bills to “get money” for purchases: “the Opium Trade affect[s] every one trading here.” By the late-1820s, this improvised circuit of global commodity exchanges had crystallized into a new system. As the historian Jacques Downs explained, “Americans drank Chinese tea paid for by Southern cotton through the medium of London bills and Asian opium.”

This system was quite profitable, but it eroded state authority in both China and the United States.

In China, American merchants' involvement in the opium trade pushed them into closer collaboration with British traders—and into conflict with Qing officials policing smuggling. Chinese administrators were increasingly convinced that opium imports were the cause of the silver exports that they thought were destabilizing the Qing empire's money supply. The complicating factor was that smuggling facilitated the growth of the legitimate tea trade and, thus, expanded the revenues for Beijing. Healthy tax receipts hid the corruption that drug trafficking spread. Or, it did until things came to a head in

Bills of Exchange in the US-China Trade, 1825–32



Sources: “No. 26: STATEMENT of all the bills of exchange on London and Paris, furnished by the Bank to go circuitously; stating the places they were conditioned by the purchasers to be sent to, and the amount to each place; the amount each year; and the amount now unsettled for” in “Bank of the United States,” H.rpt. 460, 22-1 (April 30, 1832), 206 and Pitkin, *A Statistical View of the Commerce of the United States of America*, 303. Between 1826–1832, £1 was on average = \$4.875 (<https://www.measuringworth.com/exchange/>)

1839 with the outbreak of the Opium War, Britain’s invasion of the China coast to force the Qing authorities to pay the cost of opium they had seized as contraband.

The new business realities of bills and opium also affected US politics. When the Bank of the United States came under sustained attack from Jacksonian Democrats in the “Bank War,” Biddle and his allies pointed, repeatedly, to East India bills as proof of the good the institution had done. But much to Biddle’s surprise, his claims hurt the bank’s recharter campaign. The bank’s opponents seized on the explanation of how bills replaced specie as evidence of the bank’s maliciousness. The bills, critics claimed, were instruments “dealing without capital”—the kind of speculation that produced financial crises. Instead of buoying it, Biddle’s bills helped sink his bank.

In the aftermath of the Napoleonic Wars, American traders’ increasing entanglements with British commerce formed new connections between US political economy and global markets. While the links between US cotton and British textiles are well known now, in the moment enough American politicians glimpsed how integral new traffics of silver, bills and opium were to US financial health to make controlling them a public concern, too. Like their counterparts in China, American officials worried that

their countrymen’s profitable enterprises in Guangzhou were destabilizing the money supply and subverting the state. But, as in China, American policymakers’ attempts to evade the gyres of world trade had the ironic effect of immersing them more deeply in what one merchant termed the “the troubled waters of speculation.”

These depths drowned many—but not everyone. As Thomas H. Perkins advised his business partners when the Opium War broke out, crisis could mean opportunity, something he had learned trading sugar and slaves during the Haitian Revolution. “While the trouble lasts,” he wrote, “you will be enabled to do great things—But one such chance happens in a life time—*Il faut en profiter* [one must take advantage].”

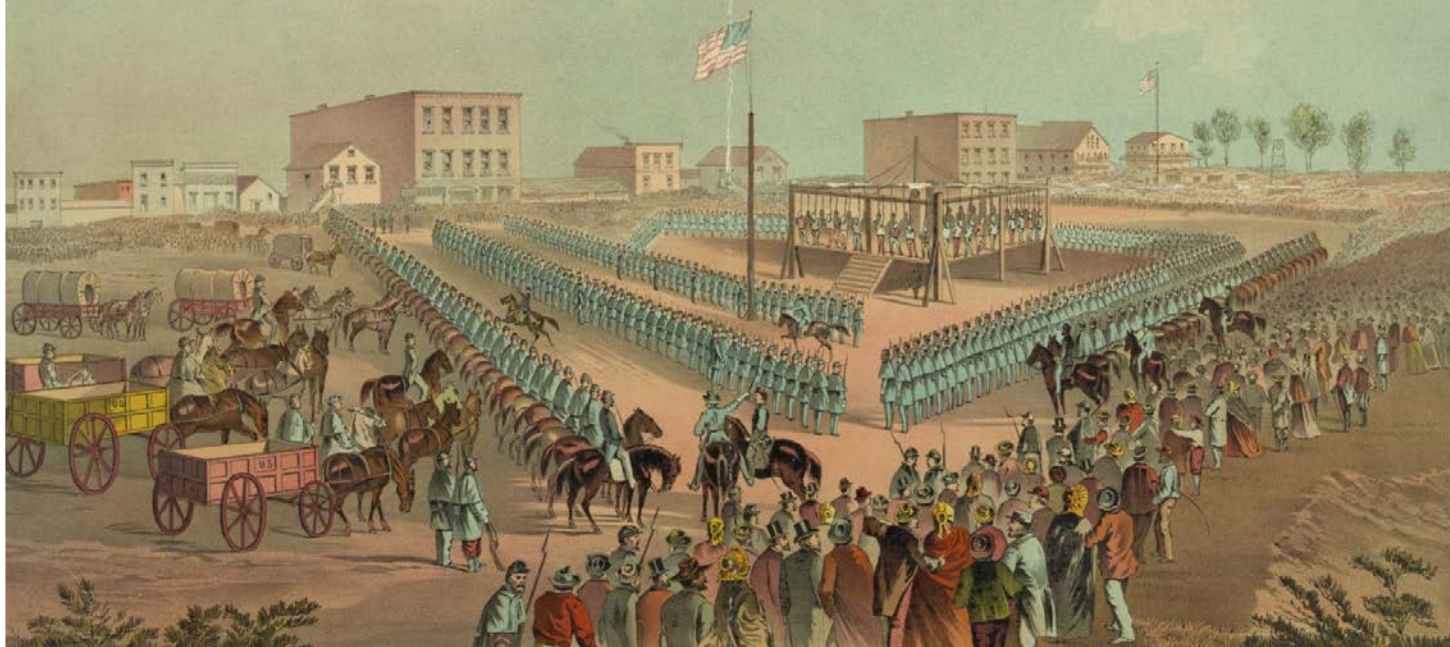
Yet, when the simmering conflict between smugglers and officials in China boiled over, Americans found themselves with new questions, as well as opportunities. As they learned how US traders might take advantage of British aggression, debates over slavery, sovereignty and the limits of liberal markets came out into the open through discussions of the China trade—redefining US-China relations and domestic politics. The complex capital flows that had slept in the hold of the *Congress* would not stay hidden in the new daylight of Americans’ efforts to understand their relationship with China. \$

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THE GOLD STANDARD *and the* DAKOTA WAR OF 1862



By Daniel C. Munson

THE DAKOTA WAR, or “Sioux Uprising” of 1862, was the bloodiest event in the long and bloody history of warfare between the US government and Native Americans. Although much has been written about that very unfortunate event, its connection to the monetary and financial history of the country is seldom mentioned or analyzed.

In the spring and early summer of 1862, the Dakota tribes of Minnesota were living on a reservation along the southwest side of a 150-mile-long stretch of the Minnesota River. The north side of the river was being settled by white farmers who were taking advantage of the provisions of the Homestead Act that was signed into law

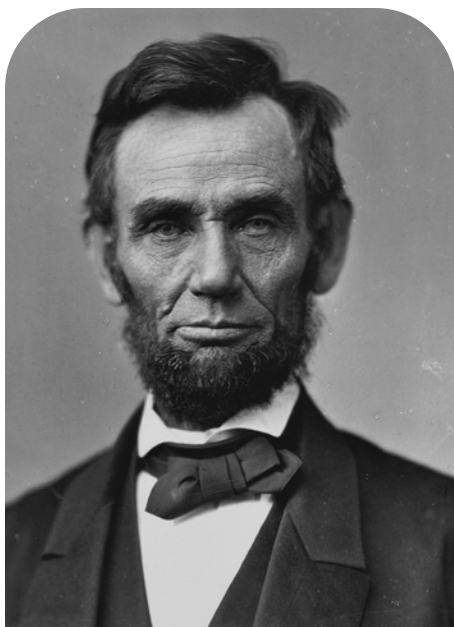
by President Abraham Lincoln on May 20, 1862. That August, many events conspired to cause a large group of Dakota men to begin attacking the whites in the area: the farmers farming the north side of the Minnesota River, the traders who traded with the Dakota near the Indian Agencies on the south side of the river and the US Army installation at Fort Ridgely near the little village of New Ulm. The attacks went on for a few weeks, hundreds died and 38 Dakota men were found guilty of having killed defenseless settlers—many of them women and children—and were hung in a large public mass execution in Mankato, Minnesota on December 26, 1862.

Historians have since busied themselves with showing how those terrible events of August 1862 might be seen as part of a long chain of events. A popular narrative is to review the entire 200+ year series of conflicts between white Europeans and the Indians of North America. This huge span of time, if compressed sufficiently, takes on the feel of inevitability and what some historians have called “Manifest

Destiny.” While a phrase summarizing events far apart in time and space can be useful, a close study of these individual conflicts—the special circumstances, chance occurrences, different governments, different weaponry, etc.—is often much more interesting than such a bland, summary judgement.

The Dakota War of 1862 is a case in point. Certain facts are different in 1862 than they were in the 17th, 18th and early 19th century clashes between Native Americans and the British and US governments, as well as the white settlers; namely, industrial development and fearsome government artillery power. Some of the historical factors that are known to have influenced those 1862 events are well documented, such as the treaties of 1851 that moved the Dakota Indians to that reservation along the Minnesota River and the corruption and petty thievery surrounding the implementation and operation of the treaties and the Civil War, with its commandeering of so many of the able-bodied men.

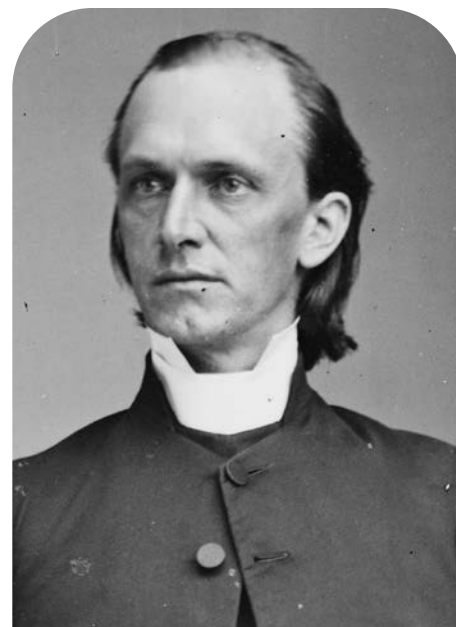
Illustration depicting the execution of 38 Sioux Indians at Mankato, Minnesota, in 1862.



Abraham Lincoln



Thomas Riggs



Henry Whipple

An interesting financial issue at the very heart of those events in Minnesota in 1862 is seldom discussed, and it looks to have been a precipitating factor: namely, the gold standard of money and the precarious state of US government finances.

Financial historians regard the Civil War as an important event in US financial history for reasons that escape most other historians. Lincoln's government was the first to issue paper currency and US Treasury notes and bonds that were not exchangeable for gold. Such historians like to trace the effects of these changes wrought by the Civil War into many other financial matters, but their gaze seldom wanders too far from the corner of Broad and Wall Streets in Lower Manhattan.

The history of attempts to issue paper currency is littered with failures: from the 18th century South Sea bubble to the hyperinflations of the present century in Zimbabwe and Venezuela. The temptation is always strong to print more of the stuff than is prudent: to pay soldiers, to build palaces, etc. The result is often rampant "inflation"—or, more pointedly, devaluation—of the paper currency.

Currencies that have held their value for centuries, such as the old British pound sterling and the Swiss franc, have had a common feature: they were exchangeable for gold. There is nothing special about gold as such, but its beauty, rarity and extreme density make it easy to store

and difficult to counterfeit, features that appealed to bankers centuries ago. Such gold-backed currencies, therefore, have an intrinsic value, while the gold backing prevents the government issuing such currency from printing more of it than it has gold to exchange for it.

The US dollar in 1860 was considered such a currency. A person in possession of \$20.67 of US currency could, at his/her option, go down to a certain government office or a certain bank and exchange the \$20.67 in currency for precisely one troy ounce of gold. As a result, the price of a pair of good quality boots in 1860 was basically the same as it had been in 1790, when the US Treasury began operations. The US dollar was said to be a "sound" currency.

The Civil War changed all of this. In early July 1861, when President Lincoln asked the US Congress for \$400 million to combat what he then called an "insurrection" in the states of the Confederacy, the US government did not have the gold to back it. The Union was in danger of dissolution, of course, and the fact that there wasn't the gold to continue to issue gold-backed money to pay for the war was a somewhat minor point to the politicians in Washington, DC.

It took a few months for the government to fully realize the implications of this fact. Shortly after President Lincoln got his authorization of money from Congress on

July 5, 1861, the US government issued \$50 million in debt notes, payable—as usual—on demand and, at the holder's option, in either paper currency or in gold.

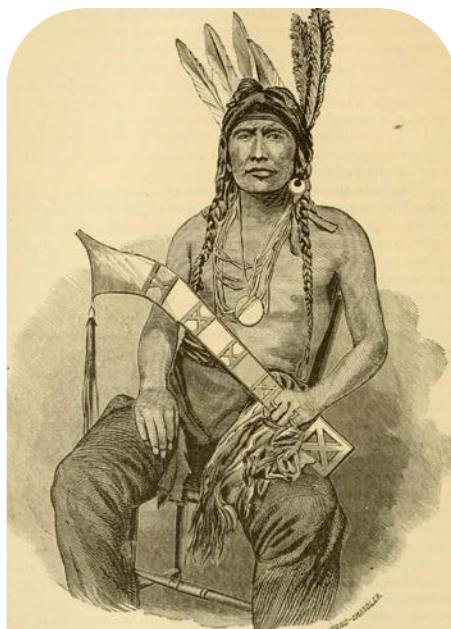
The folks working at the Treasury Department were the first to perceive the government's looming financial problem. On the outflow side of things, Treasury Secretary Salmon Chase observed in October 1861 that "the expenditures everywhere are frightful." On the other side of the ledger, one veteran Treasury official recalled that although tariffs—the main source of federal revenue in those days—could be paid either with Treasury notes or with gold, tariff payers in late 1861 began paying almost exclusively with notes. "There were demand notes out to the amount of 60 millions of dollars," he recalled, "and as these were receivable at the Custom-House the same as gold, and did not command so high a premium, duties on imports were almost exclusively paid in them, and little or no specie [i.e., gold] was received."

Gold was fleeing the government coffers.

The investing public took a little longer to adjust to the government's fiscal problems. Confidence in the federal government's finances was pinned on the hope of a quick Union victory, but the Union defeats at the first Battle of Bull Run and at Wilson's Creek in late summer 1861 began to shake that confidence. The state-chartered banks, initially willing to buy federal



Benjamin G. Armstrong



Big Eagle



Thomas Gere

notes in large amounts to do their part for the war effort, began to lose their faith in those US government notes as their depositors began to redeem their bank notes for gold. By late December 1861, these state banks had lost half their gold reserves and such reserves were dwindling further each day. The banks suspended gold exchange on December 30, 1861. It is one of the recurring themes in financial history: war causes gold to disappear into private hands as prospects of a quick military victory dim and as the costs of the war effort mount.

The federal government was out of options, and it began printing new, unsecured paper currency in February 1862. This new federal currency that was no longer exchangeable for gold was called a “greenback,” and it became a derogatory term as the war dragged on and the greenbacks printed to pay for the war declined in purchasing power.

These financial events in Washington, DC were of considerable interest out in Minnesota. Those 1851 treaties between the government and the Dakota Indians were negotiated around that stable, gold-backed dollar. The Indians and their leaders would naturally wonder as to the government’s ability, during time of war, to meet the treaty terms. They could be understandably concerned as to whether they would be paid at all.

These fiscal problems of the federal government would have been of considerable interest to the agents and traders at the Indian agencies along the Minnesota River as well. Their trading with the Indians was dependent on the US government coming through with the yearly treaty payments. Perhaps, the traders might speculate, the annuity payment would be made in greenbacks rather than in gold. Perhaps it would be smaller than usual due to senior government claims. Or perhaps payment would simply be delayed or suspended until the war was over.

The traders would likely have communicated this uncertainty to the Indians who lived nearby, and the Indians would have understood. The Indians would understand the situation somewhat differently, however. The traders might see most clearly the financial uncertainty, and the Indians perhaps the military uncertainty. Once war commenced, tribal leaders knew, the outcome could never be certain. If their treaty was with a government that could be defeated in battle and fail, then did they not have a potentially unenforceable treaty?

The Indians had little in the way of stored provisions—their crop yields had been poor in 1861 due to a generally poor growing season. The crops of 1862 were looking very good, but they were not ready just yet, and the Indians were hungry and increasingly impatient.

The federal government initially answered the question as to how the Dakota would be paid by treating the Dakota just like everyone else. Thomas Riggs was working with his father on his father’s mission to the Dakota along the Minnesota River in 1862. He recalled that, “Currency had been sent out first instead of [gold] coin, but it had to be returned because the Indians would not accept currency.”

Bishop Henry Whipple, cousin of Union General Henry Hallock and the head of the Episcopal diocese in Minnesota, was a great friend of the Dakota Indians of his state. He described the cluster of Indians that began to gather about the Lower Agency in late July 1862, demanding food for their tribes.

“I had never seen the Indians so restless,” he wrote. “The Indians had heard that they were not to receive their payment [in gold],” Bishop Whipple recalled, and he tried to assure them they would. The bishop addressed one of the clerks and told the clerk that “Major Galbraith [the US government’s agent] is coming down to enroll the Indians for payment.”

The clerk tried to impress upon the bishop that he knew better. “Galbraith is a fool,” the clerk told the bishop. “Why does he lie to them? I have heard from Washington that most of the appropriation has been used to pay claims against the Indians. The payment will not be made. I have

told the Indians this and have refused to trust them.” Bishop Whipple was taken aback. “I was astounded that a trader’s clerk should claim to know more about the payment than the government agent,” he wrote later.

This trader’s clerk, for better or worse, was the representative, the front face, of the US government—at least as far as the Lower Sioux tribes were concerned. It was easy for the Indians to not much like what they saw.

Benjamin G. Armstrong was another Minnesotan caught in the middle of this confusion. A southerner who had traveled north in 1840 to try roughing it in the Minnesota wilderness, Armstrong quickly learned to live with the Ojibwe Indians, and he became fluent in the Ojibwe and Dakota languages. By 1862, he was a trusted intermediary between the US government’s Interior Department and the Indians of Minnesota. He wrote of a meeting in August 1862 between Superintendent of Indian Affairs Thompson and the Dakota chiefs: “The superintendent called the chiefs together and told them that he would give them their goods annuities at once, as they were then on the ground, and...as soon as the money came he would notify them and they could come for it. They asked what kind of money it would be, to which he answered, he did not know, but whichever kind it was he would pay it to them. He could not tell what kind of money the great father had on hand, but thought it would be currency. They then demanded coin [i.e., gold] and said they would not take greenbacks.”

This uncertainty surrounding the payment is also confirmed by one of the Dakota chiefs who survived the war and related his memory of those events to a reporter years later. “Big Eagle” enumerated five causes of the conflict and remembered distinctly that “The government was in a great war, and gold was scarce, and paper money had taken its place, and it was said the gold could not be had to pay us.”

The combustible situation along the Minnesota River valley that July and August of 1862 was of little moment back in Washington, DC. The demands made by the Indians of Minnesota reached Washington as the Union Army—President Lincoln’s Army—was stalemated at best in its battles with the Confederacy.

Confederate troops, specifically General Robert E. Lee’s Army of Northern Virginia, were camped within 50 miles of the US capital that summer of 1862, a capital that seemed to its residents to be woefully under-protected. These problems were of much more pressing concern to the residents of Washington, DC than any news reports from those distant Minnesota lands, lands that had only become part of the Union four years before.

The escalation of events in mid-August 1862 are well known to Minnesota historians: The refusal of the Agency traders to release food stores for the Indians living nearby. The precipitous behavior of some of the young Dakota men on August 17 in attacking and killing some clerks and farmers near Acton, Minnesota after those young men may have been denied service at the general store there.

The early hours of August 18 were chaotic. The Indians, perhaps fearing government retribution for the events the day before at Acton, attacked in all directions: they attacked the defenseless farmers and their families just across the river, and they attacked those Lower Agency traders. Those near the Lower Agency were the first killed, and those who resided near the Lower Agency and escaped those attacks were the first to reach Fort Ridgely and sound the alarm.

Meanwhile, as those events were occurring, a well-guarded wagon was cantering down the road between St. Paul and Fort Ridgely. The ambush of a detachment of Fort Ridgely soldiers left the fort temporarily under the command of a 20-year-old lieutenant, Thomas Gere. Gere later described those hectic events and mentioned almost parenthetically that “At about noon [on August 18, 1862] there arrived at the fort in charge of C.G. Wykoff, clerk of the Indian superintendent, and his party of four, the long-expected annuity money, \$71,000 [approximately 235 pounds or \$6 million today] in gold.”

The US government was late, but it was making good on its treaty promises. The gold had arrived in St. Paul on August 16, but with no telegraph lines between St. Paul and Fort Ridgely the people most interested in this development had no idea the yearly annuity payment was on the way. The gold arrived at Fort Ridgely four short hours after those calamitous events began. \$

Daniel C. Munson is a student of financial and scientific history and the author of a book entitled Malice Toward None that describes those Dakota War events and the story of four siblings orphaned by that war who went on to live very admirable lives.

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Saving British India

World War,
International
Trade and the
Pittman Act



IN EARLY SPRING 1918, Nevada Senator Key Pittman answered the telephone in his office. It was Mint Director Raymond T. Baker. His voice was tense as he urged Pittman to immediately come to the Treasury building to discuss important business concerning the production and price of silver. Pittman told Baker he was about to leave Washington for a two-day trip, and that he would meet with him upon his return. There was a pause. The Mint Director then nervously called Russell C. Leffingwell, Assistant Secretary of the Treasury, to the phone.

Leffingwell told the senator there was a situation that would greatly affect the silver industry, but that it was much more serious than that. Immediate action was needed to prevent devastating consequences threatening American success in the war effort. Cancelling his plans, Pittman rushed over to the Treasury, where he met with Leffingwell, Baker and other members of the US government. The senator was surprised to also see Lord Reading, the British ambassador, as well as representatives of other foreign nations. The tension in the room coupled with the demeanor of those present told Pittman that this was indeed a very serious matter.

He learned that it concerned the amount of silver held by the Bank of England and the Royal Mint, and a tense political situation brewing in British India.

British Indian Wartime Economy

The onset of World War I in July of 1914 saw a drop in both Indian imports and exports. Previously, Germany had been a significant importer of Indian cotton, jute, rice and coconut products. The war depressed these industries. However, within a short period a great demand for Indian products by the Allied Powers and the Orient, where the belligerent nations could no longer supply commodities, generated significant economic activity throughout India. Japan became a major

Map of the British Raj, which lasted from 1858 to 1947. This 1909 map of India presents British India in two shades of pink and the Princely states in yellow.



Lord Reading, British Ambassador to the United States, went to the US Treasury to meet Pittman.



Raymond T. Baker, US Mint Director, was also waiting at the Treasury to meet Senator Pittman.

trading partner of the subcontinent, buying up all of the cotton available. There was a comparable market for Indian jute, tea, hides and skins, raw wool and indigo.

In a letter dated March 30, 1918, Treasury Secretary William Gibbs McAdoo wrote to Senator Pittman, “The demand for Indian products has been unusual. Jute bagging is used for sugar, grain and fertilizer bags, also as outside wrappers for cotton and other products. It is also used for trench bags and for packing many articles of military necessity. No article has been found that will serve as a substitute.”

Due to the great demand for its raw materials, Indian exports were massive vis-à-vis its imports. This export/import imbalance is dramatically reflected in Indian trade with the United States from 1914 to 1919 (see Table 1).

India and the Price of Silver

In his letter to Pittman, McAdoo stated: “The European War has greatly enlarged the demand for silver. European countries engaged in the conflict have required unusual quantities of silver coins for their armies and for the civilian population... The Orient is willing to accept silver in place of gold for commodities furnished by them”—especially India—“and it is to the interest of the United States and its allies that foreign trade balances should, as far as possible, be settled in silver rather than gold.” Thus, the price of silver steadily rose during the war, leading to significant shortages in British India and the United Kingdom itself (see Table 2).

The rise in the value of silver was due mostly to the seemingly limitless demand

TABLE 1

Year Ending June 30	Indian Exports to US	Indian Imports from US	Excess of Exports Over Imports
1914	\$75,630,860	\$11,696,094	\$64,776,289
1915	51,982,703	10,854,591	40,286,609
1916	71,745,626	19,297,016	52,448,610
1917	102,106,682	28,396,043	73,710,639
1918	105,277,743	42,395,622	62,882,121
1919	125,471,458	50,501,740	74,969,228

Source: “The Silver Situation in the Far East.” *The Economic World*, Vol. 105. New York: Chronicle Company, April 17, 1920, p. 547.



Senator Key Pittman, who was responsible for creating silver legislation in Congress to help the British avoid crisis in India.



Treasury Secretary William Gibbs McAdoo, who advised Senator Pittman on developing his silver legislation.

for the resources of India, whose domestic manufacture of commodities was tremendously ramped up during the war. This was due to a British government war policy enacted in order to end shipments of raw materials to England for production and re-exportation to India. This resulted in India becoming self-sufficient in numerous industries. Therefore, as the manufacture of raw materials rapidly increased, the huge trade balance in India's favor saw ever-increasing shipments of silver to its shores.

According to a report published in *Economic World*: "This demand for silver as a medium of exchange, coupled with a world shortage of silver as a commodity (due mainly to the conditions in Mexican mining districts, the diversion to war industries of labor in other mining regions, the increased use of silver money by soldiers in the field and the general rise in all commodities in terms of gold), has brought about the...high price of silver."

Late 1916 saw Lord Walter Cunliffe, governor of the Bank of England

(hereafter, "the Bank"), write to Mr. Bonar Law, chancellor of the exchequer, discussing silver shortages. Cunliffe suggested expanding the Royal Mint, which Law felt would lower its output. According to an unpublished report of the Bank, Law "pointed out also that supplies [of silver] could not be substantially increased without 'directly enhancing the famine price' already reached: if the price of the ounce went up to 3s/8-1/2d there would be serious trouble in connection with the currency of India."

TABLE 2

	London Price of Silver per Ounce, 1.000 fine	Gold Value of Silver in Rupee
1914	\$0.59797	\$0.20555
1915	.56099	.19284
1916	.74213	.25511
1917	.94627	.32528
1918	1.12002	.38707

Source: "The Silver Situation in the Far East." *The Economic World*, Vol. 105. New York: Chronicle Company, April 17, 1920, p. 547.

German Silver Propaganda

Among the nations that were purchasing large volumes of raw material and other goods from India was the United Kingdom. Most of the war materiel needed for the British campaign in Mesopotamia arrived via ships from Bombay. In order to cover these expenses, England issued what were called "council bills." They were employed in India as rupee currency and, in essence, were silver certificates redeemable on demand at their face value in silver

rupees. However, throughout the war German propagandists actively attempted to convince the Indian people that British banks did not have enough silver coins in reserve to redeem the council bills. This propaganda played into the general mistrust of paper money held by many Indians.

According to Fred L. Israel, in a 1961 article in *Pacific Historical Review*, “An unexpected run on the British redemption agencies in 1917 verified this. The British were able to meet demands for payments in silver up to the beginning of 1918.”

Problems in Britain and India

In early 1918, a fresh order of silver bullion was placed, for the large distribution of coin at Christmastime in the United Kingdom had failed to return. On March 16, the Bank advised the Royal Mint that its supply of coinage was insufficient. Only two days later, the deputy master acknowledged that the Mint was unprepared for currency needs, and was thus behind schedule in every respect. He could see no way out of the predicament without the issuance of small notes.

Additionally, there was a shortage of silver bullion. Production of the white metal had diminished and, in 1918, a great demand arose in India. The Bank’s unpublished report states, “Not only was it necessary to provide against a possible run on the [Indian Redemption] Agencies to cash silver certificates, but the position was accentuated by the fact that the large war-time exports from India could not be balanced by imports, resulting in an excessive demand for rupees and the absorption of these into circulation.”

The situation in India exacerbated. It was not helped by cultural attitudes about money. In an interview with *The New York Times* in 1918, James Meston, finance member designate of the Viceroy’s Council, said, “Indian financiers have always

Three council bills issued by the British administration in India: *Top*, a five rupee note issued on December 2, 1918; *middle*, a 10 rupee note issued on August 22, 1918; *bottom*, a 100 rupee note issued on July 10, 1918. Such notes were silver certificates redeemable on demand at the Indian Redemption Agencies at face value for silver rupees.



been faced by the difficulty that the Indian masses do not understand any modern currency systems. Numbers of them do not know what checks or paper money are. They want actual hard cash, and they have an incorrigible habit of taking silver and gold coins and beating them into bangles and other ornaments for their wives. This is one form of saving, but the result is that India for years has been known as the 'sink of precious metals.'"

Situation in India Becomes Desperate

Early 1918 saw prices rising, and there was not enough currency for everyday commerce. The government attempted to make up for the lack of coinage by distributing council bills of various denominations. But the Indian people were distrustful of them, believing that their issuance meant the government could not meet its financial responsibilities. In March 1918, there was a run on Indian currency reserves. People in rural districts rushed to cash in their notes at the Redemption Agencies.

According to Israel, "Redemption was made in gold, but by March the entire reserve of the empire had dwindled to about 34% of the outstanding currency." German propaganda had played an important role in creating this situation. It was a difficult time, for the government knew that if just one Redemption Agency ran out of silver and gold coins, the result could be disastrous. There would be much turmoil: military recruitment would cease, the production of armaments would be suspended and export of necessary war materials such as wheat, jute and cotton would halt.



PCGS

The US Treasury was authorized by Congress (through the Pittman Act) to melt up to 350 million US silver dollars and sell the silver bullion to the British for \$1 an ounce. Above is an 1882-O (New Orleans Mint) US Morgan silver dollar.

Senator Pittman wrote of his meeting at Treasury: "The British ambassador [Lord Reading]...frankly confessed to us that in a very few days the Indian government would be compelled to admit that it could not redeem these certificates unless a supply of silver could be obtained, with the result that there would be great disturbance in India. We all knew what a revolution in India would mean."

Colossal Hoard of Silver Dollars

How could the United States help with the situation in India? Well, the largest hoard of silver in the world was being held in the vaults of the US Treasury and its mints around the country. In them sat about 490 million silver dollars

that had been gathered under the provisions of the Bland-Allison Act (1878) and the Sherman Silver Purchase Act (1890). Congress—and Congress alone—had the authority to allow the melting of silver dollars and shipping the bullion to the United Kingdom.

Developing the Pittman Bill

Senator Pittman was made fully responsible for the emergency silver legislation. Although he was motivated to help both his nation and the United Kingdom in the war effort, he also saw an opening to benefit the silver industry. He wrote, "Our mines would all be closed down if we could only receive the present world market price of silver." While quite aware of the



The ruins of the Old Silver Mint House at 60 Strand Road in Calcutta, where bullion from millions of US silver dollars (via the Pittman Act) was used to produce millions of Indian rupees.



A silver one rupee coin dated 1919 struck at the Calcutta Mint, more than likely produced with silver bullion from melted US silver dollars, courtesy of the Pittman Act of 1918.

urgency to develop emergency legislation to assist the British, senators and representatives from the silver-producing states wanted to replace the reserve to equal the amount that would be melted and sold.

After a conference that included senators from silver-producing states, silver mining interests and experts from the Treasury Department, the repurchase price of \$1 an ounce was agreed upon. Israel wrote, "In other words, the Treasury would rebuy all silver that had been sold at the swollen war price." It was on the House floor that Representative Edward Platt of New York declared that this was "a plain case of holdup by the silverites."

On April 9, 1918, Pittman introduced the bill as a war emergency action, after which it was submitted to the Committee on Banking and Currency. The crisis situation was explained to the committee by representatives of the silver producing states, along with Treasury Department officials. Unanimously approving the bill, the committee reported it to the Senate. The critical situation in India was explained to every

senator. Few speeches were presented on the resolution, and those that were delivered were carefully guarding the main purpose of the bill. Only two dissenting votes were cast on the Senate floor, while in the House it passed with little opposition. President Wilson signed the Pittman Bill into law on April 23, 1918.

Specifics of the Pittman Act

Pittman designed this emergency war measure to profit the silver industry, pure and simple. The Pittman Act set a temporary price for silver at \$1 an ounce, authorizing the Secretary of the Treasury to melt up to 350 million standard silver dollars and to sell the bullion from them at \$1 per ounce. The Treasury Secretary was ordered to retire silver certificates equaling the number of melted silver dollars. Israel wrote, "The Pittman Act therefore assured the miner of...\$1 an ounce for at least four years. Thus, two markets for American silver existed, the world market and the government market."

Indian Silver Imports

Due to shortages of silver during the war, the sources of Indian silver imports shifted during and after World War I (see Table 3).

It should be noted that India had no domestic silver mining industry during this period. Therefore, all silver—coin and bullion—had to be acquired via trade and import. The below table demonstrates the problems the United Kingdom was having providing silver to India, as well as the significant amount of imports from the United States resulting from the Pittman Act. The unpublished Bank of England report states that due to the Pittman Act, "the share of India was 200 million fine ounces, which were imported to India before July of [1919]. The silver was required by India owing to a run on the Indian Redemption Agencies, to cash silver certificates, which was said to have been started by German propaganda."

The Indian trade with China was mostly of an arbitrage nature, with silver continuously being shipped back and forth between Bombay and Shanghai when local price levels in these two important silver markets had a significant shift from each other. However, when UK silver exports to India virtually dried up, it was only the United States and China that demonstrated generosity to the Indian subcontinent vis-à-vis silver exports.

The Pittman Act's Cost to Americans

The heightened war demand for silver from 1917 to 1919 saw the world price soar to an unequaled \$1.38 an ounce during 1919. The high price for the year 1920 reached \$1.37; however, it also dipped to a low of 60 cents an ounce. No matter how low the actual market value was, the

TABLE 3: India's Annual Silver Imports, Percentage by Countries

	UK	Bahrain	Arabia	Persia	China	East Africa	US	Australia	Other
1914–15	77.00	2.82	1.14	1.58	4.44	.14	.54	6.41	5.93
1915–16	62.69	2.00	1.04	1.73	6.64	—	.34	11.63	13.93
1916–17	34.40	.64	.18	1.00	45.53	—	2.09	3.02	13.14
1917–18	8.51	.03	.18	.09	36.83	—	39.70	5.37	9.29
1918–19	.34	—	.01	.01	1.66	—	72.36	3.68	21.94
1919–20	2.78	—	.65	1.52	.03	—	59.42	2.71	33.49
1920–21	63.63	1.42	2.67	2.44	14.81	—	4.43	.10	10.50

Source: Don Carroll Bliss. "Sources of Silver Imports: Sea-Borne Trade." *The Bombay Bullion Market*. US Government Printing Office, 1927, p. 56.

Pittman Act compelled the US government to purchase American silver at \$1 an ounce.

According to Israel, in 1921 many members of Congress asked why “the United States was buying several million ounces of silver—the product of America’s mines every month—at 35 cents an ounce above the world market price.” The simple yet frustrating answer was that such purchases were made law via the Pittman Act.

Actual cash losses on silver purchases under the Act were about \$70 million. The sales to England—which saved British India from turmoil and helped the Allied war effort—totaled around \$259 million. The repurchase of American silver at \$1 an ounce replaced that substantial amount. Israel wrote, “The metallic value of the dollars at the time of sale was approximately \$200 million. Their metallic value after repurchase was approximately \$60 million. The differences represented an additional loss.”

There should have been another way to help England in its struggle to acquire the silver needed to save British India. In a dire situation during a world war, the

silver interests—with the help of their lackeys in Congress—forced the American taxpayer to gift them a boondoggle of absurd proportions. In a 1932 article in *The North American Review*, Neil Carothers wrote, “That the Congress of the United States should pass such a measure as the Pittman Act is a tragic commentary on government in a democracy.” \$

Eric Brothers has been a frequent contributor to The Numismatist, the publication of the American Numismatic Association (ANA), since 2006. Several of his articles have covered financial history, including “Alexander Hamilton and the Panic of 1792” (January 2021). He also writes for ANS Magazine, a publication of the American Numismatic Society in New York. This is his fourth article for Financial History.

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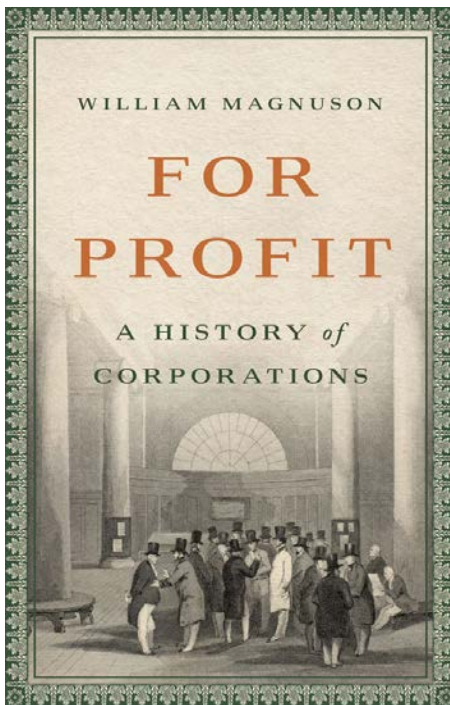
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Basic Books, 2022
344 pages

TRACING “a history of corporations” in only 324 pages sounds like a daunting task. Tracing “the shift of the corporation” from “a public entity with a public purpose” to an organization that acts merely as “a mindless engine of profit” seems more achievable. Deep into his concluding chapter, William Magnuson uses those phrases to produce a useful description of this provocative work. This former corporate lawyer—now law professor and author—supports his account of the corporation’s evolution with profiles of an eclectic mix of organizations from ancient Rome to the present day.

The book starts slowly with a description of the public-spirited activities of the men who managed the *societates* in the

Republic of Rome in the first and second centuries BC. Their successors’ greed, corruption and excessive demands for profit probably contributed to the devolution of that Republic to an Empire. Another chapter tells how Giovanni Di Bicci De’ Medici and his son Cosimo ran their eponymous bank with unusual skill and creativity from 1397 to 1464. But grandson Piero and great-grandson Lorenzo mixed business and politics in ways intended for their own good instead of the larger Florentine business community and allowed a competitor to force the bank’s closure in 1494.

The author reminds the reader that the 1600 charter of the East India Company called for it to “contribute to the greatness of England,” even while it allowed its stockholders to reap the profits of the company’s trading activities around the world. Over time, company managers acted as if East India was its own government. Their aggressive and militaristic behavior eventually led the British Parliament to emasculate the company in 1783, long before another generation of legislators was ready to fully nationalize it in 1857. It’s an appropriate spot to cite Adam Smith’s well-known assertion that an “invisible hand” guides individuals who are pursuing their own rational self-interest to also promote the interests of society at large. But the author suggests that Smith doubted the ability of the corporation to do the same.

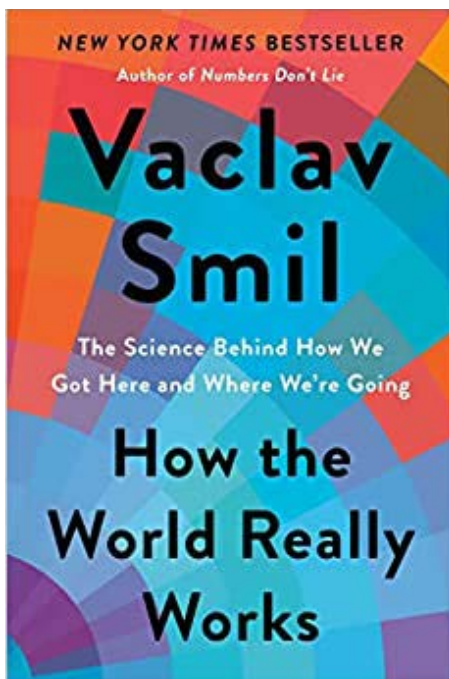
Magnuson is not the first to acknowledge the extraordinary accomplishment of the companies that built this country’s transcontinental railroads. More important for the book’s core premise, however, is his assertion that the executives of the Union Pacific “turned...a national champion into a national villain.” They used the rare form of a government-issued corporate charter to finance an undertaking with an obvious public benefit while taking advantage of every opportunity to maximize their personal rewards.

The narrative picks up speed as it describes Henry Ford’s implementation of an effective system of mass production that nevertheless created a working environment that was “draining, exhausting, dehumanizing and cruel.” But the book really hits its stride when Magnuson praises Exxon Corporation for being at the “forefront of energy innovation” and “creating new technologies” while at the same time criticizing it for doing “business with dictators and autocrats” and selling a product that was “found to be destroying the environment.”

In another profound commentary, he criticizes KKR and the widely vilified “slash-and-burn strategies of private equity” while admitting that such firms “forced big companies to adapt to a new world of shareholder empowerment.” And in an even more timely observation, he notes the uncommonly difficult challenges social media companies, such as Facebook, must address as they try to balance the competing interests of stockholders, users and society at large.

In his conclusion, Professor Magnuson gives in to his urge to offer some “guiding principles for fixing corporations,” i.e., helping them blend their obligations to various constituencies that may have equal claims on their behavior, conduct and actions. It’s apparent throughout that the author is neither an apologist for certain corporations’ bad behavior over the centuries, nor a firebrand who sees them as the source of all evil. Instead, he acknowledges their perennial influence and tries to understand the nuances in their purposes and objectives. One wishes more authors would do the same. **\$**

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**How the World Really Works:
The Science Behind How We Got
Here and Where We're Going**

By Vaclav Smil
Penguin Random House, 2022
306 pages with notes

ECONOMIC EXPERTS are comfortable couching their prognostications using monetary yardsticks: GDP, deficits, growth rates, etc. Vaclav Smil's *How the World Really Works* offers a discussion of this same economic subject using weights and measures, forces and atoms.

Smil is a Czech-born Canadian environmental scientist whose book is an engineer's guide to modernity. In place of abstract monetary quantities, Smil offers tangible physical facts to explain the material progress and physical comfort of our times, going on to define and chronicle the development of what he calls the four tangible pillars supporting modern life: steel, cement, plastics and ammonia.

The author traces the dissemination of these "pillars" throughout the world, a history of often halting, irregular progress.

Smil's work is dense, but by avoiding too much scientific and mathematical precision he has produced an engineering text accessible to all. He details the specific technical advances that explain our use of concrete and steel in such massive amounts to produce hydro power and transportation infrastructure, how jet and diesel engines, oil tankers and container ships enable international trade—trade that is currently dependent on the energy density of fossil fuels.

Controversy lurks in these details. Energy quantification leads to comparisons that throw a good deal of shade on the idea that "alternative energy" sources like wind and solar power can reliably provide the energy we need when we need it without significant advances in storage (i.e., battery) technology, even detailing the extent to which these "clean" technologies depend on fossil fuels for their production. Smil also details the critical role that the engineering of fossil fuel-dependent ammonia-based fertilizers, pesticides, tractors, etc. have played in increasing agricultural output. He estimates that without this oil-dependent technology, the world's farmlands could feed only three to four billion people, a number that stands in sobering contrast to the roughly eight billion currently fed. (The recent protests in Sri Lanka concerning fertilizer regulation suggests Smil may have a point.)

The author has the usual fun with our inability to rationally assess risks, although he might concede that the math that permits the weighing of these risks is not simple. He examines our concerns for the biosphere, discarding some (e.g., running out of oxygen) and focusing instead on water and runoff contaminants. He addresses the increased CO₂ and methane concentrations in the atmosphere and their effect on global temperatures, arguing that although temperature increases will change water levels, the more urgent water problem is usage efficiency. The United States does well in this regard, but other areas—many of them arid—are not as efficient as they could be.

The centrality of energy to modern life, when combined with its technical complexity, creates economic and political difficulties. "Modern economics," Smil summarizes, "has largely ignored energy." This has led many advancing various "carbon-free by 2030"-type goals to construct plans that the author views as "the academic equivalent of science fiction." Convenient assumptions are made that are at variance with both technological reality and human nature. He asks rhetorically whether the billion people in Africa will be willing to forego air conditioning and automobiles as their wealth increases. China's billion people did not, but in adjusting their models to make their numbers work, many of our planners blithely assume that Africans will.

An interesting subtext to the book is the way in which important advances have often been made by unexpected people little recognized today. Scientists Albert Einstein and Fritz Haber were contemporaries living in Germany, and while Einstein's advances are well known and lauded, Haber's advance (ammonia from nitrogen gas) now feeds half the world. Smil sees in the Haber story a lesson that defies those he labels the catastrophists and the cornucopians: catastrophists busy themselves fretting our demise by extrapolating current trends, while cornucopians believe prominent techno-wizards will solve all our problems. More often, Smil argues, it is the unexpected, little-recognized advance that can be scaled and improved that has bettered our lives.

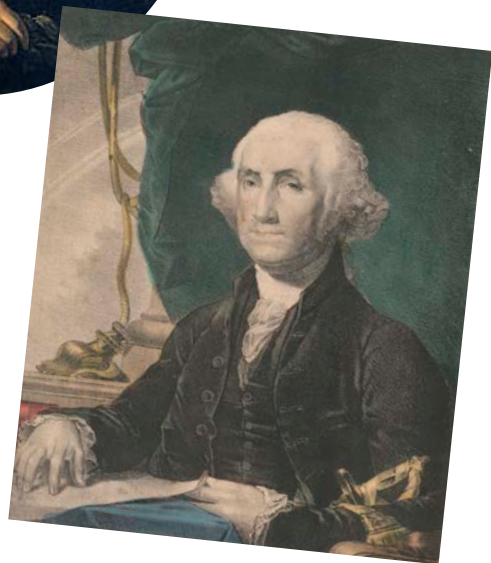
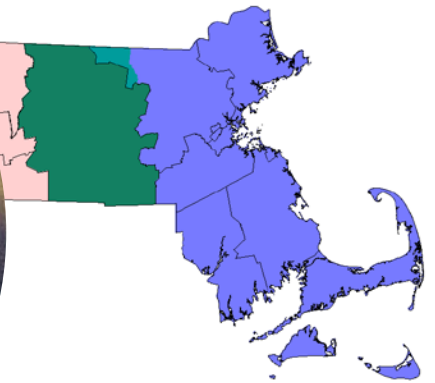
The author sees scant evidence of humanity's ability to learn from history or to plan around certainties like another pandemic. He leaves us with the hope that our policymakers can treat with caution the dire pronouncements of the catastrophists and the grandiose plans of the cornucopians. \$

Daniel C. Munson enjoys reading and writing economic and scientific history. His writings have appeared in Barron's, Financial History and other publications.

TRIVIA QUIZ

HOW MUCH DO YOU KNOW ABOUT FINANCIAL HISTORY?

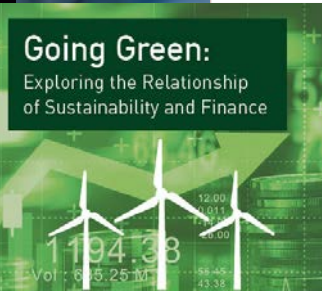
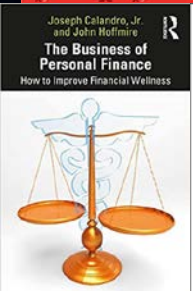
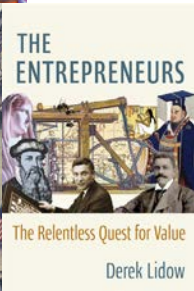
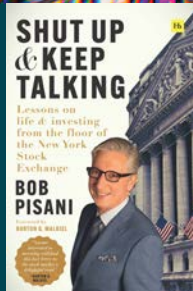
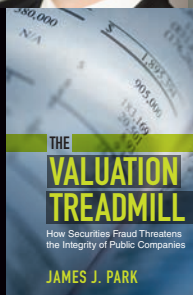
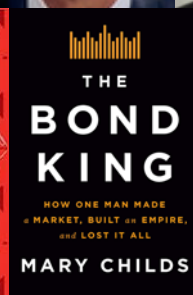
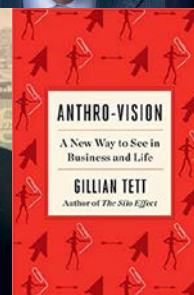
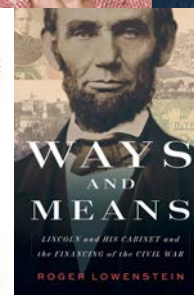
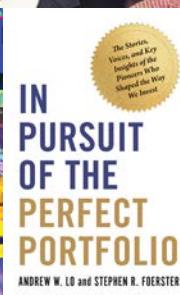
1. What iconic investor's first rule of investing is "Never lose money?"
2. In what US state was modern currency invented in the 17th century?
3. What type of US coins were melted into bullion as a result of the 1918 Pittman Act?
4. What exchange first traded options contracts in April 1973?
5. Who was the president of the Second Bank of the United States from 1823–1836?
6. What company sued the American Stock Exchange because the exchange failed to secure the company's consent before trading options on its stock?
7. What financial issue was at the heart of the 1862 Dakota War?
8. What is typically the slowest month of stock market trading?
9. Approximately how many \$100 bills are currently in circulation?
10. What product did George Washington produce at Mount Vernon that was such high quality he was able to sell it at premium prices?



1. Warren Buffett
2. Massachusetts
3. Silver dollars
4. Chicago Board Options Exchange (Cboe)
5. Nicholas Biddle
6. Golden Nugget
7. The gold standard
8. September
9. 12 billion
10. Flour

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